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GULFSTREAM IV

Quick Reference Handbook

Gulfstream Aerospace Document Number
GAC-AC-GIV-OPS-0003

5 Oct 2011

TO: All Gulfstream IV Operators

SUBJECT: GIV Quick Reference Handbook Revision 26, Dated 5 Oct 2011

This letter to operators introduces the release of GIV Quick Reference Handbook Revision 26, dated 5 Oct 2011. This revision corresponds with GIV Airplane Flight Manual (AFM) Revision 48, dated 5 October 2011. This revision is applicable to both non-SP GIV aircraft (SN 1000 through 1213 not having ASC 190) and GIV-SP aircraft (SN 1214 and subs; SN 1000 through 1213 having ASC 190).

To incorporate this revision, remove the superseded pages and incorporate the new pages, noting the reasons for change outlined in the **Summary of Revision 26.** Please use the **List of Effective Pages** to ensure the inclusion of all pages. If any missing pages are noted while incorporating this revision, please contact Flight Crew Technical Information at 1-800-810-4853 (United States) or 1-912-965-4178 (International) and select Option 3, followed by Option 2.

(over, please)

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Pilot's Checklist (PCL):

No changes were made to the GIV Pilot's Checklist as a result of the update to the QRH, and the current revision of the GIV Pilot's Checklist is still Revision 25. It is approved for use as a companion checklist to GIV QRH Revision 26.

We in Flight Crew Technical Information hope that our commitment to the timeliness, accuracy, and user-friendliness of your QRH demonstrates our determination to provide nothing less than absolute customer satisfaction. Toward that end, we want your advice on how to make your manuals better with each revision. Please feel free to contact us at any time using either the *Pilot's Manuals Direct Line* form or the contact information listed at the end of this letter.

Thank you for the opportunity to better serve you.

Thomas A. Walters

Sincerely,

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Airplane(s) Production Serial Number(s): _______ / _______ / _______ / _______

Model: GI GII GIIB GIII GIV GV

Manual: AFM AOM QRH PCL Other

Question or Suggestion: ____

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Summary of Revision 26, Dated 5 Oct 2011

Rev Bar Location	Reason For Change
Front Matter	Reflects Revision 26
Introduction	Reflects Revision 26
Normal Procedures	
NA-1 – NA-2	Cockpit Preflight Inspection – Corrected section callout in step 6.
NC-1 – NC-4	Before Starting Engines – Corrected callout in title. Corrected section title callout in step 18, step 21, step 32, step 36. Deleted step 39. Renumbered subsequent steps. Corrected section title callout in step 44, step 52, step 58, step 72.
ND-1 – ND-2	After Starting Engines - Corrected section title callout in step 14, step 15.
NH-1 – NH-34	Holdover tables removed. Section repaginated. Fuel Additives - New anti-icing additive added (MIL-I-85470) to step 2.
Annunciation Messages	
MA-1 – MA-2	Added Other Warning Annunciations and Procedures to TOC
MA-3 – MA-4	DOOR BAGGAGE: procedure revised.
MA-9 – MA-10	New Section: Added Other Warning Annunciations and Procedures
MB-5 – MB-6	AHRS COOL FAIL: Added SPZ 8000 equipped to message.
MB-19 – MB-20	IRS 1-2-3 COOL FAIL: Revised, adding SPZ 8400 requirement, IRS 1-2 ON BATTERY:, revised, deleting IRS 3 from indication.
Abnormal/Emergency Procedures	
E-i – E- viii	Updated TOC to reflect new sections and title changes.
EA-1 – EA-2	Updated Title: for Flight With One Electrical System Inoperative
EA-9 – EA-10	Flight With One Electrical System Inoperative - Revised subsection title, added NOTE above step 1 of Alternator/Converter Failure, changed 30,000 ft to 35,000 ft in multiple places. Fixed various minor text errors.
EA-27 – EA-28	APU Inflight Operation – Alternate Electrical Source - Under Running – Altitude, '30,000 ft. and below' revised to read '35,000 ft. and below'
ED-7 – ED-8	Airplane Interior Fire / Smoke / Fumes - Step 2 referenced to baggage compartment numbered incorrectly, changed to step 4. Revised Step 5A, Added NOTE. Revised NOTE following step 8A.
EF-7 – EF-10	Combined Hydraulic System Failure – Loss of Pressure and Fluid - Revised step 3, adding CPO A-1. Added new step 15. Renumbered subsequent steps.
EG-9 – EG-10	Nutcracker System Fails to Shift to Air Mode at Takeoff. Corrected callout in title. Revised step 4, added circuit breakers A-13 and C-13.
EI-1 – EI-4	Added Main Entrance Door Not Secure to TOC. Windshield Failure - Corrected callout in title. Cabin Window Cracked - Corrected callout in title.

Summary of Revision 26, Dated 5 Oct 2011

Rev Bar Location	Reason For Change
EI-5 – EI-8	Main Entrance Door Not Secure, new procedure added.
S-41 – S-56	Sorted alphabetical list of circuit breakers by ATA.

Publications Point of Contact

For questions or comments concerning this handbook, please contact:

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List of Effective Pages

Total number of pages in this publication is **594**, composed as shown on the following.

Section		Pages	Rev. No.	Section		Pages	Rev. No.
Front Matter				**Abnormal / Emergency Procedures**			
Data Pages	(F)	**1 - 4**	**26**	TOC Pages	(E)	**i - viii**	**26**
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* = Brake By Wire ** = HMAB

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Record of Revisions

Dates of issue for original and changed pages are:

Revision No:	Dated:	Inserted By:	Date:
Revision 13 (Re-issue)	Dec 8/05	Gulfstream	5 Oct 2011
Revision 14	June 1/06	Gulfstream	5 Oct 2011
Revision 15	July 13/06	Gulfstream	5 Oct 2011
Revision 16	Jan 16/07	Gulfstream	5 Oct 2011
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Revision 18	May 22/07	Gulfstream	5 Oct 2011
Revision 19	July 26/07	Gulfstream	5 Oct 2011
Revision 20	Sep 18/07	Gulfstream	5 Oct 2011
Revision 21	Dec 21/07	Gulfstream	5 Oct 2011
Revision 22	May 13/08	Gulfstream	5 Oct 2011
Revision 22.1	Aug 28/08	Gulfstream	5 Oct 2011
Revision 23	Nov 20/08	Gulfstream	5 Oct 2011
Revision 23.1	Feb 12/09	Gulfstream	5 Oct 2011
Revision 24 (Re-issue)	Mar 17/10	Gulfstream	5 Oct 2011
Revision 25	Jul 14/10	Gulfstream	5 Oct 2011
Revision 26	5 Oct 2011		

Gulfstream Aerospace Document Number GAC-AC-GIV-OPS-0003

Owner Information

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Registration No.:	

Normal Procedures Index

Normal Procedures Index, ctd…

Normal Procedures Index, ctd…

Supplemental Data

Functional Checks

Notes

Cockpit Preflight Inspection

AFM 2-01-10

WARNING: **ENSURE WHEEL WELL AREAS ARE CLEAR OF PERSONNEL AND/OR DOOR-CONTROL SAFETY PINS ARE INSTALLED PRIOR TO OPERATION OF THE AUX PUMP.**

1. Circuit Breakers – (Pilot / Copilot / Elec. Equip. Area) ....CHECK
2. Standby Attitude Indicator .... CAGED
3. Emergency Power .... ARM / CHECK
4. Standby Engine Instrument and Warning Panel .... AUTO
5. ESS AC and DC Bus Switches (6) .... AUTO
6. Battery 1 and 2 Switches (**Battery Integrity Check**: Pg. NI-1) .ON (22-27V)
7. Emergency Power .... OFF
8. EPMP Power Monitor Switch ....ESS (115V AC / 400 HZ / 22 - 27V)
9. Standby Engine Instrument and Warning Panel ....CHECK
10. Landing Gear Handle ....DOWN / 3 GREEN
11. Pressurization Controls .... CHECK / OUTFLOW VALVE OPEN

    NOTE: Check manual control of outflow valve on first flight of day.
12. Fuel Quantity ....CHECK
13. Flaps ....SET (10° RECOMMENDED FOR PREFLIGHT)
14. Parking Brake ....ON
15. Brake Accumulator Indicator ....CHECK / 3000 PSI

    NOTE: The correct accumulator precharge pressure (1200 psi) will increase or decrease 25 psi for each 10°F (5°C) above or below 70° F (21° C).
16. Brake ECU (Brake-By-Wire) / Skid Control Box (HMAB)................ .... CLEAR OF FAULTS
17. Battery 1 and 2 Switches..OFF

END

Exterior Preflight Inspection AFM 2-01-20

1. Wheel Well Doors.. OPEN

   WARNING: **WITH THE LANDING GEAR DOOR-CONTROL VALVE SAFETY PINS REMOVED, ANY MANUAL OR AUTOMATIC ACTIVATION OF THE AUX PUMP MAY CAUSE THE WHEEL WELL DOORS TO IMMEDIATELY CLOSE. ACTIVATION OF THE COMBINED HYDRAULIC SYSTEM OR UTILITY PUMP WILL CAUSE THE WHEEL WELL DOORS TO IMMEDIATELY CLOSE.**

   WARNING: **DO NOT REMOVE NLG DOOR-CONTROL VALVE PIN FROM INSIDE NOSE WHEEL WELL.**

   CAUTION: THE DOOR-CONTROL VALVE HANDLE SHOULD NOT BE ALLOWED TO SNAP BACK UNDER SPRING PRESSURE. THIS WILL EVENTUALLY AFFECT NORMAL FUNCTIONING OF THE VALVE.

2. Oxygen Quantity...............................CHECKED / DOOR SECURE
   (1800 psi, 1500 psi minimum at 70°F [21°C].)

3. Forward External BATT Switch / Access Door ...... OFF / SECURE
   (SN 1156 and subs.)

4. Pitot Covers...REMOVE

5. Radome...CHECK

6. Hydraulic Lines..CHECK

7. Nose Gear Uplock .... OPEN

8. Brake Accumulator Gauge .... CHECK (1200 PSI PRELOAD)

9. Emergency Air Bottle...... CHECK (3000 PSI AT 70°F (21°C) OAT)

10. Nose Gear Ground Lock ....REMOVE

11. Door-Control Valve...
    .... FLIGHT POSITION / PIN REMOVED / COVER SECURED

    WARNING: **WITH THE LANDING GEAR DOOR-CONTROL VALVE SAFETY PINS REMOVED, ANY MANUAL OR AUTOMATIC ACTIVATION OF THE AUX PUMP MAY CAUSE THE WHEEL WELL DOORS TO IMMEDIATELY CLOSE. ACTIVATION OF THE COMBINED HYDRAULIC SYSTEM OR UTILITY PUMP WILL CAUSE THE WHEEL WELL DOORS TO IMMEDIATELY CLOSE.**

    WARNING: **DO NOT REMOVE NLG DOOR-CONTROL VALVE PIN FROM INSIDE NOSE WHEEL WELL.**

CAUTION: THE DOOR-CONTROL VALVE HANDLE SHOULD NOT BE ALLOWED TO SNAP BACK UNDER SPRING PRESSURE. THIS WILL EVENTUALLY AFFECT NORMAL FUNCTIONING OF THE VALVE.

12. Nose Landing Gear (NLG) Wheel Well Area........................CHECK
13. Cannon Plugs Inside NLG Wheel Well.................................CHECK
    Inspect all cannon plugs for condition and security.
14. Nosewheel Strut / Fairing / Electrical Wires ....CHECK
15. Torque Link..PINNED / SAFETIED
16. Taxi Lights / Tires ....CHECK
17. TAT Probe .... COVER REMOVED / CHECK
18. Right Angle of Attack Probe .... COVER REMOVED / CHECK

NOTE: Verify sensing ports are oriented in the direction of flight.

19. Outflow Valve / Safety Valve / Static Ports........................... CLEAR
20. External DC Power Door .... CHECK / SECURE
21. Right Static Ports ....
    .... COVER REMOVED / CHECK - RVSM NO DAMAGE
22. Antennas...CHECK
23. Right Ice Inspection / Emergency Lights ....CHECK
24. Right Landing Light...CHECK
25. Window Emergency Releases / Windows......................... SECURE
26. Right Engine Inlet / Cooling Inlets ... COVER REMOVED / CHECK
27. Right Wing Vent... CLEAR
28. Pressure Fuel Panel .... CHECK / SECURE
29. Wing Anti-Icing Vent .... CLEAR
30. Right Sump Drains ....CHECK / NOT LEAKING FUEL
31. Anti-Collision Lights ....CHECK
32. Right Pressure Fueling Static Port .... CLEAR
33. Right Wing Leading Edge...CHECK
34. Right Fuel Tank Vent / Plenum Drain / (VGs: ASC 461).....CHECK
35. Right Nav Light / Wing Tip ....CHECK
36. Right Winglet ....CHECK

37. Right Static Wicks ....CHECK

38. Right Aileron / Flaps / Spoilers / Bungee ....CHECK

Check surfaces for damage, security of attach points, condition of all actuators, aileron bungee free play, plumbing, and cables forward of the flap. Check condition of flap rollers.

NOTE: To determine if the bungee is normal, move the aileron manually with one hand and, while holding the bungee with the other hand, observe if there is any free play in the bungee between the outer cylinder and the inner cartridge. A normally-operating bungee will not exhibit any free play when the aileron is moved. Attached to the bungee is what is referred to as a "slop link" (at the inboard connector to the aileron actuator) which does have free play per design. Do not confuse that with free play in the bungee.

39. Right Main Gear Strut / Fairing ....CHECK

40. Right Main Gear Tires / Brakes ....CHECK

NOTE: The PARK/EMER BRAKE must be set to properly check brake wear indicator reading.

41. Right Tire Flange Retaining Rings (Inboard / Outboard).....CHECK

42. Right Main Gear Ground Lock ....REMOVE

43. Right Main Gear Uplock .... OPEN

44. Right Main Wheel Well Area ....CHECK

45. Cannon Plugs Inside MLG Wheel Well ....CHECK

Inspect all cannon plugs for condition and security.

46. Main Fuel Shutoff Valve Position ....VERIFY OPEN

NOTE: Verify the main fuel shutoff valve is open by physically checking that the red valve position indicator is at the "open" mechanical limit (approximately the seven o'clock position).

47. Fuel Boost Pumps ....CHECK / NO LEAKS

NOTE: Inspect the boost pumps for security and tightness of all accessible line fittings. Ensure no fuel leakage is present.

48. Right Main Door Control Valve..
....FLIGHT POSITION / PIN REMOVED

WARNING: **WITH THE LANDING GEAR DOOR-CONTROL VALVE SAFETY PINS REMOVED, ANY MANUAL OR AUTOMATIC ACTIVATION OF THE AUX PUMP MAY CAUSE THE WHEEL WELL DOORS TO IMMEDIATELY CLOSE. ACTIVATION OF THE COMBINED HYDRAULIC SYSTEM OR UTILITY PUMP WILL CAUSE THE WHEEL WELL DOORS TO IMMEDIATELY CLOSE.**

CAUTION: THE DOOR-CONTROL VALVE HANDLE SHOULD NOT BE ALLOWED TO SNAP BACK UNDER SPRING PRESSURE. THIS WILL EVENTUALLY AFFECT NORMAL FUNCTIONING OF THE VALVE.

49. Service Door .... SECURE
50. APU Exhaust .... CLEAR
51. Right Engine Fire Extinguisher ....CHECK
52. Right Pre-Cooler Exhaust .... CLEAR
53. Right Heat Exchanger Exhaust .... CLEAR
54. Right Engine Cowl / Vents .... CHECK / SECURE
55. Right Thrust Reverser ....CHECK / PROPERLY STOWED

    NOTE: If the lower thrust reverser door leading edge is sagged out of normal contour, report for maintenance action before next flight.

56. Elevator / Rudder / Static Wicks ....CHECK
57. Tail Cone Navigation Light / Static Wick ....CHECK
58. Horizontal Stabilizer Position ....CHECK
59. Aft Compartment ....CHECK
    - A. AUX Power Relay Box Circuit Breakers ....CHECK
    - B. Aft Emergency Battery Circuit Breakers ....CHECK
    - C. Converter Failed Fan Indicators ....CHECK
    - D. APU Fault Indication Box...CHECK
    - E. Hydraulic Filter Bypass Indicators (8).............................CHECK
    - F. Thrust Reverser Safety Pins...................... CHECK / REMOVED
60. APU Fire Extinguisher ....CHECK
61. Aft Compartment Ladder / Door .... SECURE
62. External AC Power Door .... CHECK / SECURE
63. Hydraulic Accumulator Pressures .... CHECK (1000 PSI)
64. Hydraulic Quantities ....CHECK (DC POWER REQUIRED)
65. Hydraulic Service Door .... SECURE
66. External Air Door .... CHECK / SECURE
67. Left Hand Exchanger Exhaust.. CLEAR
68. Aft External Batt Switch / Access Door ....OFF / SECURE

69. Battery Compartment ....CHECK / SECURE
70. Left Engine Fire Extinguisher ....CHECK
71. Left Pre-Cooler Exhaust .... CLEAR
72. Left Engine Cowl Vents.....................................CHECK / SECURE
73. Left Thrust Reverser.....................CHECK / PROPERLY STOWED

    NOTE: If the lower thrust reverser door leading edge is sagged out of normal contour, report for maintenance action before next flight.

74. Baggage Door .... SECURE
75. Service Door.. SECURE
76. Left Main Wheel Well Area..CHECK
77. Cannon Plugs Inside MLG Wheel Well ....CHECK

    Inspect all cannon plugs for condition and security.

78. Main Fuel Shutoff Valve Position ....VERIFY OPEN

    NOTE: Verify the main fuel shutoff valve is open by physically checking that the red valve position indicator is at the "open" mechanical limit (approximately the seven o'clock position).

79. Fuel Boost Pumps ....CHECK / NO LEAKS

    NOTE: Inspect the boost pumps for security and tightness of all accessible line fittings. Ensure no fuel leakage is present.

80. Left Main Gear Uplock... OPEN
81. Left Main Gear Ground Lock ....REMOVE
82. Left Main Gear Strut / Fairing ....CHECK
83. Left Main Gear Tires / Brakes ....CHECK

    NOTE: The PARK/EMER BRAKE must be set to properly check brake wear indicator reading.

84. Left Tire Flange Retaining Rings (INBD / OTBD) ....CHECK
85. Left Main Door Control Valve ....FLIGHT POSITION / PIN REMOVED

    WARNING: **WITH THE LANDING GEAR DOOR CONTROL VALVE SAFETY PINS REMOVED, ANY MANUAL OR AUTOMATIC ACTIVATION OF THE AUX PUMP MAY CAUSE THE WHEEL WELL DOORS TO IMMEDIATELY CLOSE. ACTIVATION OF THE COMBINED HYDRAULIC SYSTEM OR UTILITY PUMP WILL CAUSE THE WHEEL WELL DOORS TO IMMEDIATELY CLOSE.**

CAUTION: THE DOOR-CONTROL VALVE HANDLE SHOULD NOT BE ALLOWED TO SNAP BACK UNDER SPRING PRESSURE. THIS WILL EVENTUALLY AFFECT NORMAL FUNCTIONING OF THE VALVE.

86. Left Flaps / Spoilers / Aileron / Bungee ....CHECK
Check surfaces for damage, security of attach points, condition of all actuators, aileron bungee free play, plumbing, and cables forward of the flap. Check condition of flap rollers.

NOTE: To determine if the bungee is normal, move the aileron manually with one hand and, while holding the bungee with the other hand, observe if there is any free play in the bungee between the outer cylinder and the inner cartridge. A normally-operating bungee will not exhibit any free play when the aileron is moved. Attached to the bungee is what is referred to as a “slop link” (at the inboard connector to the aileron actuator) which does have free play per design. Do not confuse that with free-play in the bungee.

87. Left Static Wicks ....CHECK
88. Left Winglet..CHECK
89. Left Navigation Light / Wing Tip..CHECK
90. Left Fuel Tank Vent / Plenum Drain / (VGs: ASC 461) ....CHECK
91. Left Wing Leading Edge ....CHECK
92. Left Pressure Fueling Static Port.. CLEAR
93. Left Wing Vent .... CLEAR
94. Left Sump Drains...........................CHECK / NOT LEAKING FUEL
95. Window Emergency Release / Windows........................... SECURE
96. Left Engine Inlet/Cooling Inlets........ COVER REMOVED / CHECK
97. Left Landing Light ....CHECK
98. Left Ice Inspection / Emergency Lights ....CHECK
99. Left Static Ports .... COVER REMOVED / CHECK - RVSM NO DAMAGE
100. Air Stair Door Seal..CHECK
101. Standby Pitot Probes....................... COVER REMOVED / CHECK
102. Left Angle of Attack Probe............... COVER REMOVED / CHECK
NOTE: Verify sensing ports are oriented in the direction of flight.

103. Door Pins / Gear Pins / Pitot Covers ....STOWED

104. Landing Gear Doors ....CLOSED

END

Interior Preflight Inspection

AFM 2-01-30

1. Baggage Compartment Door ....CHECK / SECURE
2. Baggage Door Seal Control Valve Selector .... NORMAL OPS
   (SN 1156 and subs. and SN 1000 thru 1155 with ASC 157.)
3. Windows .... SECURE
4. Fuel Tank Caps .... SECURE
5. SPZ-8000/8400 Shutoff Switch (RH Radio Rack).................... OFF
   (SN 1156 and subs. and SN 1000 thru 1155 with ASC 92.)
6. Wing Vortex Generators..CHECK
7. Cabin Area .... SECURE
8. System Monitor / Test Panel ....CHECK
9. Passenger Briefing .... CONDUCT
   - A. Interior Doors Open for Takeoff and Landing
   - B. Use of Seat Belts / Shoulder Harness
   - C. Seat Table Position for Taxi, Takeoff, Landing and Turbulence Encounters
   - D. Location and Operation of Normal and Emergency Exits
   - E. Location and Operation of Survival Equipment
   - F. Use of Oxygen and PELS Smoke Hoods (if installed)
   - G. Smoking Policy
   - H. Storage of Loose Articles
   - I. Use of Portable Electronic Devices
   - J. Time Enroute and Any Known Delays
   - K. Enroute and Destination Weather

END

APU Start

AFM 2-02-10

1. HP Fuel Cocks .... SHUT
2. Circuit Breakers .... CHECK
3. Standby Attitude Indicator .... CAGED
4. EPMP Bus Switches (6) .... AUTO
5. Battery 1 and 2 Switches .... ON
6. Exterior Lights .... AS REQUIRED
7. Electric Master Auxiliary Power .... OFF
8. APU Fire Warning .... CHECK
9. APU Air .... OFF
10. APU Master Switch .... ON
11. APU Oil Pressure Low Light .... ON (10 SECONDS)

    For SN 1156 and subs, check the following on first start of day:

    A. APU Overspeed Test Switch .... PRESS
    B. Overhead Panel Indications .... CHECK
        1) APU RPM Indicator .... MOMENTARILY INCREASES
        2) Overspeed LED .... MOMENTARILY ILLUMINATES

            NOTE: The overspeed LED will not illuminate and RPM will not momentarily increase in airplanes with ASC 465 or SN 1310 and subs.

        3) APU Oil Pressure Low Light .... EXTINGUISHED
    C. APU Master Switch .... OFF
    D. APU Master Switch .... ON
    E. APU Oil Pressure Low Light .... ON (10 SECONDS)

    NOTE: For airplanes having ASC 465, the APU Electronic Control Unit (ECU) performs a 12 second Built-In-Test (BIT) after the APU Low Oil Pressure light illuminates. Expect a delay in starter activation if the APU Start switch is activated during the APU ECU BIT.

12. Left Main Fuel Boost Pump .... ON / MESSAGE OUT
13. APU Start Switch .... PRESS
14. APU Start Light .... OUT (BEFORE 60%)

15. APU Oil Pressure Low Light................. OUT (BEFORE 95% RPM)

16. RPM... 100% ±3%

17. EGT .... 988°C MAXIMUM (0-60%)
821-732°C: 60-100% DURING START (LINEAR DECREASE)
732°C: MAXIMUM (RUNNING)

For airplanes having ASC 465 (36-150[G] APU):

EGT .... 973°C MAXIMUM (0-50%)
973-732°C: 51-87% DURING START (LINEAR DECREASE)
732°C: 87-100%
732°C MAXIMUM (RUNNING)

CAUTION: IF APU FAILS TO COME UP TO SPEED OR START-SWITCHLIGHT REMAINS ILLUMINATED, DEPRESS OVERSPEED TEST-SWITCH. IF APU START-SWITCHLIGHT STILL REMAINS ILLUMINATED, PLACE APU MASTER SWITCH AND BATTERY SWITCHES 1 AND 2 OFF.

NOTE: For airplanes having ASC 465 (36-150[G] APU), it is acceptable for the APU EGT synoptic indication to go into the amber or red range during start. The synoptic indication only reflects running limitations.

END

APU Starting Using External DC Power

AFM 2-02-40

CAUTION: ENSURE AC EXTERNAL POWER IS DISCONNECTED.

1. Battery 1 and 2 Switches .... OFF
2. TRU Circuit Breaker (UNDER “AC RIGHT” ON PDB) .... PULL
3. DC External Power..CONNECT
4. Electric Master Auxiliary Power.. ON
5. Battery Voltage..CHECK (Above 4 volts)

CAUTION: FOR AIRPLANES WITHOUT ASC 54, THE BATTERIES MUST BE DEEP-CYCLED PRIOR TO FLIGHT IF BATTERY VOLTAGE IS BELOW 4 VOLTS. IF BATTERY VOLTAGE IS BETWEEN 4 AND 20 VOLTS PRIOR TO APU START, THE BATTERIES MUST BE DEEP-CYCLED AT NEXT AVAILABLE MAINTENANCE FACILITY.

CAUTION: FOR AIRPLANES WITH ASC 54 AND BATTERY VOLTAGE BELOW 4 VOLTS, THE BATTERIES MUST BE DEEP-CYCLED AT NEXT AVAILABLE MAINTENANCE FACILITY, AFTER USING THIS PROCEDURE.

6. External DC ON Indicator Light ....ON
7. Battery Charger Circuit Breakers 1 and 2 .... CLOSED
8. HP Fuel Cocks .... SHUT
9. APU Fire Warning ....CHECK
10. APU Air .... OFF
11. APU Master Switch ....ON
12. APU Oil Pressure Low Light .... ON (ten (10) seconds)
13. Left Main Fuel Boost Pump ....ON
14. APU Start Button ....PRESS (momentarily)
15. APU Oil Pressure Low Light ....OUT (before 95% RPM)
16. RPM ....100% ± 3%
17. EGT ....988°C MAXIMUM (0-60%)
821°C -732°C: 60-100% DURING START (LINEAR DECREASE)
732°C: MAXIMUM (RUNNING)

For airplanes having ASC 465 (36-150[G] APU):

EGT ....973°C MAXIMUM (0-50%)
973°C - 732°C: 51-87% DURING START (LINEAR DECREASE)
732°C: 87% to 100%
732°C: MAXIMUM (RUNNING)

CAUTION: IF APU FAILS TO COME UP TO SPEED OR START-SWITCH LIGHT REMAINS ILLUMINATED, DEPRESS OVERSPEED TEST-SWITCH. IF APU START-SWITCH LIGHT STILL REMAINS ILLUMINATED, PLACE APU MASTER SWITCH AND BATTERY SWITCHES 1 AND 2 IN “OFF” POSITION.

18. Battery 1 and 2 Switches ....ON

END

APU Ground Operation

AFM 2-02-20

1. Electric Master Auxiliary Power.................................. ON / CHECK
2. Battery Charger FAIL Lights..OUT
3. Battery Amps...CHARGING

   NOTE: If no charge is indicated on battery immediately after start, battery charger failure may be indicated.

4. L / R ECS Pack Switches..ON
5. APU Air.. ON / CHECK PRESSURE

   NOTE: Wait two (2) minute for EGT to stabilize before selecting APU AIR ON. After six (6) seconds, verify isolation valve is OPEN. Maximum APU EGT with APU AIR ON is 680° C.

END

APU Shutdown

AFM 2-02-30

1. Electrical Master Auxiliary Power.. OFF
2. APU Overspeed Test Button...
   ....PRESS (MOMENTARILY) NOTE OVERSPEED INDICATION
3. APU AIR... OFF

   NOTE: APU AIR switch position should not be changed just prior to shutdown. After shutdown, wait until RPM indicates less than 95% before changing APU AIR switch position.

4. APU MASTER................................ OFF (RPM LESS THAN 10%)

   CAUTION: **(FOR AIRPLANES NOT HAVING ASC 465 (36-150[G] APU)):** CYCLING APU MASTER SWITCH DURING SHUTDOWN WHILE RPM REMAINS ABOVE 10 PERCENT WILL CAUSE PREMATURE ECU RESET AND LOW ENERGY RESTART RESULTING IN HIGH EGT INDICATION AND TORCHING FROM APU TAILPIPE.

   NOTE: **(For airplanes having ASC 465 (36-150[G] APU)):** The amber **APU MASTER WARN** CAS message will not be displayed if the APU MASTER switch is inadvertently left ON after shutdown.

5. Fuel Boost Pumps...................................... OFF / AS REQUIRED

END

Before Starting Engines AFM 2-03-20

☐ = Thruflight Items

1. Preflight Checklists .... COMPLETE
2. Circuit Breakers ....CHECK
3. EPMP BUS Switches (6) .... AUTO
4. ELECTRIC MASTER LEFT PWR / RIGHT PWR Switches ..... OFF
5. BATT 1 / BATT 2 Switches...ON
6. Essential AC / DC Bus VOLTS.. .... CHECK 115 V AC / 400 HZ / 22 - 27 VDC
7. STANDBY ELECTRICAL POWER System.............................. OFF
8. HP Fuel Cocks.. SHUT
9. ELECTRIC MASTER AUX PWR / APU AIR .... ON / ON
   See **APU Ground Operation** checklist, page NB-4.
10. EMERGENCY POWER... ARM
11. DISPLAY Switches (3)...ON
12. CABIN / GALLEY / RADIO MASTER Switches..........................ON
13. Display Controllers (2) ....ON
    (SN 1156 and subs. and SN 1000 thru 1155 with ASC 92.)
14. IRSs ....NAV
15. FMSs .... INITIALIZE
16. DISPLAY SWITCHING / SYMBOL GENERATOR CONTROL ....NORM

    NOTE: Check first flight of month.
17. ENGINE BLEED AIR / TEMP CONTROL ....OFF / AS REQUIRED

    NOTE: Selecting ENGINE BLEED AIR switches OFF will help extend life of the bleed air valves by de-energizing the solenoids.
18. PRESSURIZATION CONTROL (**Pressurization System Check**: Pg. NI-2 ....CHECK / SET
19. OUTFLOW VALVE .... OPEN
20. ANTI-ICE Switches (4) ....OFF
21. FUEL SYSTEM (**Fuel System Check**: Pg. NI-3)................CHECK
22. REMOTE FUELING SHUTOFF Switches (2)........................ OPEN

23. ENGINE SYNC .... OFF
24. Engine Temperature Control .... ON

    NOTE: Airplanes SN 1320 and subs and SN 1000 through 1319 with ASC 394 have the engine temperature controls removed.

25. EVM .... (WITH ENGINES SHUT DOWN ONLY) TEST
26. ENGINE START Switches (2) .... OFF
27. EXTERIOR LIGHTS .... AS REQUIRED
28. ENGINE FIRE TEST / FAULT TEST .... COMPLETE
29. Windshield Wipers .... OFF
30. ANTI ICE HTR Switches .... AS REQUIRED
31. UTILITY PUMP .... ARMED
32. AUX PUMP / Brake System (**Auxiliary Hydraulic Pump / Brake System Check**: Pg. NI-9) .... CHECKED

Side Panels:

33. Radar Controls .... AS REQUIRED
34. ICS Panels .... AS REQUIRED
35. Oxygen Systems .... ON / CHECK
36. Oxygen Masks (**Oxygen Crew Mask / Regulator Preflight Test**: Pg. NI-4) .... TEST
37. COCKPIT LIGHTS .... AS REQUIRED
38. Warning Lights .... CHECK
39. RH Radio Rack Fan .... AUTO
41. Tone Generator .... TEST

    NOTE: For SPZ-8400 equipped airplanes, the tone generator test is performed using the pilot's display controller TEST menu. Selecting TONE results in the test tone: a Klaxon (hi-lo-hi-lo) landing gear unsafe tone. In test mode, the pilot can adjust tone generator volume. Test is completed by selecting the RETURN prompt to return to the TEST main menu.

42. Landing Gear Emergency Reset .... IN / SAFETIED
43. EMER LDG GEAR Handle .... IN / SAFETIED
44. Cockpit Voice Recorder (**Cockpit Voice Recorder (CVR) Test**: Pg. NI-6) .... CHECK
45. Flight Data Recorder .... SET
46. Non-Essential Static Control (if installed) .... ON / NORMAL

47. EMER FLAP Handle .... NEUTRAL
48. EMERG FLAP Switch .... NORMAL / GUARDED
49. Smoke Detector .... TEST
50. RH RR FAN AUTO Indicator (SN 1156 and subs) .... AUTO

Instrument Panel:

51. Clocks .... CHECK
52. Display Controllers (**Display Controller Test**: Pg. NI-6) ....CHECK
53. EFIS .... TEST
54. EICAS .... TEST
55. IRSs .... NAV / TEST
56. ELWS (APU) Loadmeter .... TEST / OFF

NOTE: For airplanes SN 1156 through 1429, and SN 1000 through 1155 with APU loadmeter not having ASC 420: If the ELWS (APU loadmeter) is used for dispatch, see **Operational Procedures With Converter / Alternator Inoperative - ELWS Installed**, page EA-11. Selecting ELWS loadmeter ON causes spurious readings unless the EPMP is properly configured for ELWS use.

57. Standby Engine Instruments .... AUTO

NOTE: Compare static indications with EICAS on first flight of day.

58. Flight Guidance Panel (**Flight Guidance Panel Test**: Pg. NI-8) ....CHECK
59. Thrust Reverser Lights .... CHECK
    A. REV ARM ....ON
    B. REV UNLOCK / DEPLOY ....OUT

NOTE: If either or both UNLOCK or DEPLOY lights are ON, maintenance is required before flight.

60. Standby Attitude Indicator .... UNCAGED
61. Standby Warning Lights Panel (SPZ-8000 Only)...... AS DESIRED

NOTE: The standby warning lights panel is not installed on SPZ-8400 equipped airplanes.

62. Fuel Quantity (Normal and Standby) .... TEST
63. DBDIs .... TEST

NOTE: The DBDI will return to standby after TEST unless the corresponding IRS is in NAV.

64. Cabin Pressurization Controller .... SET
65. Flap Indicator .... CHECK

66. Landing Gear Handle .... DOWN / 3 GREEN

Center Pedestal:

67. FIRE Handles .... IN
68. Power Levers .... IDLE
69. GUST LOCK Handle .... AS REQUIRED
70. GND SPLR FLAP ORIDE Switch .... OFF
71. SPEED BRAKE Handle.. RETRACT
72. Elevator Trim (**Elevator Trim System Check**: Pg. NI-11) ....CHECK / SET
    See next page for recommended elevator trim tab settings.
73. STALL BARRIER Switch .... ON
74. ANTI SKID Switch .... ON
75. GND SPLR Switch .... OFF
76. T/REV EMER STOW Switch .... OFF
77. NUTCRKR SW TEST Switch .... GUARD DOWN

    CAUTION: DO NOT DEPRESS THE NUTCRKR SW TEST-SWITCH WHILE THE AIRPLANE IS ON THE GROUND. DEPRESSING THE TEST SWITCH SIMULATES THE IN-FLIGHT CONDITION, WHICH AFFECTS MANY AIRPLANE SYSTEMS, INCLUDING MOMENTARILY UNLOCKING THE LANDING GEAR HANDLE DOWNLOCK SOLENOID.

78. PARK/EMERG BRAKE Handle... ON
79. Brake Accumulator Pressure ....3000 PSI
80. FLIGHT POWER SHUT OFF Handle .... DOWN
81. Radios .... SET
82. TCAS / TCAS MODE / SET UP ....TEST / TA-RA / ABOVE
83. EGPWS .... TEST
84. BTMS / Selector Switch (If Installed).............................TEST / ALL

    NOTE: SPZ-8000 equipped airplanes SN 1156 and subs and SN 1000 through 1155 having ASC 167. For SPZ-8400 equipped airplanes, BTMS is incorporated in the BRAKES System page. No test is required and no selection is available.

85. Rudder and Aileron Trim .... CHECK
86. EPR / V Speeds / AOA / Radio Altimeter .... SET

END

Recommended Elevator Trim Tab Settings For Takeoff

Fuel Loading (Lb)	Elevator Trim Tab Position Units								
29,000	11	10	9	8	7	6	5	4	3	2
28,000	11	10	9	8	7	6	5	4	3	2
27,000	11	10	9	8	7	7	6	5	4	3
26,000	12	11	10	9	8	7	6	5	4	3
25,000	12	11	10	9	8	7	6	5	4	3
24,000	12	11	10	9	8	7	6	5	4	3
23,000	12	11	10	9	8	7	6	5	4	3
22,000	12	11	10	9	8	7	6	5	4	3
21,000	12	11	10	9	8	7	6	5	4	3
20,000	12	11	10	9	8	7	6	5	4	3
19,000	12	11	10	9	8	7	6	5	4	3
18,000	12	11	10	9	8	7	6	5	4	3
17,000	12	11	10	9	8	7	6	5	3	3
16,000	12	11	10	9	8	7	6	4	3	2
15,000	12	11	10	9	8	6	5	4	3	2
14,000	12	11	10	8	7	6	5	4	3	1
13,000	12	10	9	8	7	6	5	4	2	1
12,000	11	10	9	8	7	5	4	3	2	1
11,000	11	10	9	7	6	5	4	3	1	0
10,000	11	9	8	7	6	5	3	2	1	-1
9,000	10	9	8	6	5	4	3	1	0	-2
8,000	10	8	7	6	5	3	2	1	-1	-3
7,000	9	8	7	5	4	3	1	0	-2	-4
6,000	9	7	6	5	3	2	0	-1	-2	-5
5,000	8	6	5	4	3	1	0	-2	-3	-5
4,000	7	6	5	3	2	0	-1	-3	-4	-6
3,000	7	5	4	2	1	-1	-2	-4	-5	-7
2,000	6	4	3	1	0	-2	-3	-5	-6	-8
1,000	5	3	2	0	-1	-3	-4	-6	-7	-8
	36	**37**	**38**	**39**	**40**	**41**	**42**	**43**	**44**	**45**
	Zero Fuel Center of Gravity - % MAC									

NOTE: A minus sign (-) indicates nose down trim.

Before Starting Engines: Thruflight

AFM 2-03-20

Perform boxed items of **Before Starting Engines** checklist (page NC-1).

END

Starting Engines

AFM 2-03-20

1. Start Page .... SELECT

   NOTE: When oil temperature is -10° C or less, refer to **GIV Operating Manual 07-01-20: Cold Weather Operations**.

2. HP Fuel Cocks ....SHUT
3. Power Levers .... IDLE
4. GUST LOCK.. OFF
5. Beacon Switch.. ON
6. APU Air / External Air ....ON / PRESSURE 25 PSI MINIMUM

   NOTE: Normal air pressure from the APU can vary from 25 to 50 psi. APU air pressure drops during the starting cycle but should not fall below approximately 20 psi.

7. Fuel Boost Pumps (One Each Side) .... ON / MESSAGE OUT
8. Electrical Power... CHECK (35% MAX)

   NOTE: If using APU, limit APU alternator load (AC AUX PWR) to 35% during main engine starts. At high elevation airports and/or in high ambient temperature conditions, limit AUX AC load to 30%.

9. Engine Start Master.. ON
10. Engine Start Switch .... PRESS

    CAUTION: CONTINUED USE OF THE STARTER IS LIMITED TO THREE (3) CRANK-CYCLES, WITH A MAXIMUM OF THIRTY (30) SECONDS PER CYCLE. DELAY THREE (3) MINUTES BETWEEN START ATTEMPTS. AFTER THREE (3) CYCLES, DELAY USE OF STARTER FOR AT LEAST FIFTEEN (15) MINUTES.

11. Start Valve and Ignition .... ON

    CAUTION: IF THE SVO INDICATION DOES NOT ILLUMUNATE DURING START, DISCONTINUE START AND SEEK MAINTENANCE PRIOR TO DISPATCH. SEE **Start Valve Failure**, PAGE EC-19.

    NOTE: If IGN mnemonic is not displayed on EICAS, the start may be salvaged by selecting AIR START IGN to ON prior to opening HP fuel cock.

12. Positive LP RPM ....CHECK
13. HP Fuel Cock .... OPEN (15% HP MINIMUM)

    NOTE: In high tailwind conditions, direction of rotation of LP may initially be reversed and, if so, the HP fuel cock should not be selected to OPEN until HP is stabilized. This ensures that LP rotation is positive. Starts with tailwinds of up to 25 knots have been demonstrated.

NOTE: Ignition should occur within ten (10) seconds after selecting HP fuel cock to OPEN. HP RPM should increase to idling speed 40 seconds or less on an International Standard Atmosphere (ISA) day or 60 seconds or less on a minus forty degrees (-40°) day.

14. Start Valve and Ignition .... OFF

    NOTE: Start valve should close by 44.5% HP RPM. On SPZ-8000 equipped airplanes, the SVO mnemonic changes from blue to amber above 42% (44.5% on SPZ-8400 equipped airplanes) and starts flashing. Check at ground idle HP RPM, and if not closed (SVO still illuminated), execute **Start Valve Failure** checklist, page EC-19.

15. TGT..MONITOR (700° C MAX)

    NOTE: During starting, TGT should not exceed 700°C. If there is any evidence of rapid rising TGT and it is anticipated that 700°C will be exceeded, select HP fuel cock to SHUT immediately. If TGT has not exceeded 700°C, a second start may be attempted. If, under normal starting conditions, TGT exceeds 650°C, this will indicate a fault in the engine or starting systems. TGT may exceed 650°C when ambient conditions cause high density altitudes.

    NOTE: **Hot Start** checklist, if needed, is on page EC-21.

16. Engine RPM................................ CHECK (46.6% HP MINIMUM)
17. Oil Pressure and Temperature ....CHECK
18. EVM ....CHECK

    NOTE: The EVM system is designed to monitor engine vibrations at idle and above. During start, the EVM system may occasionally display momentary EVM values above the ALERT level (0.60) which in turn causes EVM digits to an amber display momentarily on CAS (SPZ-8400 equipped airplanes). This normally occurs on the first start of the day.

19. **SNGL RUDDER LIMIT** Message (right engine only running)....ON
20. Hydraulic Pressure ....CHECKED (0 / 3000 / 3000 / 0)
21. **FLIGHT REC FAIL** Message ....CHECK OUT
22. Second Engine Start........................REPEAT STEPS 10 THRU 18
23. **SNGL RUDDER LIMIT** Message (both engines running)........OUT
24. Hydraulic Pressure ....CHECKED (3000 / 3000 / 0 / 0)

END

Notes

After Starting Engines

AFM 2-04-10

1. START MASTER .... OFF
2. ELECTRIC MASTER LEFT PWR / RIGHT PWR Switches .... ON / CHECKED
3. External Electrical Power / Air .... OFF / CARTS REMOVED
4. Auxiliary Electrical Power / Air / Engine Bleed Air..... AS DESIRED

   NOTE: Only one source of bleed air, either APU or engines, should be selected after engines are started. This is to prevent thermal transients on the APU or possible damage to the APU when the power levers are moved from idle. With engines as source of bleed air, ensure the isolation valve is CLOSED.

5. Battery Ammeters ....CHECK
6. ESS DC Bus Power Source ... AUTO / LEFT MAIN ILLUMINATED

   CAUTION: DO NOT DISPATCH WITH ESS DC BUS POWERED BY THE BATTERIES.

7. Emergency Power .... ARMED
8. Doors .... CLOSE

   NOTE: Check that the orange dot position-indicator on each of the six locking-pins is visible.

9. Anti-Ice Heaters ....ON
   SN 1096 and subs. (5); SN 1000 through 1095 (4).
10. Cowl / Wing Anti-Ice ....CHECK / AS REQUIRED

    NOTE: To prevent excessive APU EGT, check or select cowl anti-ice / wing anti-ice ON using engine bleed air only.

    A. L/R Cowl and Wing Anti-Ice...ON
    B. COWL A/I ON Message / WING A/I Message ....DISPLAYED
    C. Cowl Anti-Ice Pressure (Overhead Panel)................................... ....VERIFY GREATER THAN ZERO
    D. L/R Cowl and Wing Anti-Ice... OFF
    E. COWL A/I ON Message / WING A/I Message..................... OFF
    F. Cowl Anti-Ice Pressure (Overhead Panel) ....VERIFY ZERO
11. Pressurization Control .... AUTO / FLIGHT / SET
12. Fuel Boost Pumps / Crossflow Valve ....ON / CLOSED
13. Nose Wheel Steering...OFF

14. Ground Spoilers (**Ground Spoiler System Check**: Pg. NI-12) ....CHECK

    NOTE: Check on first flight of the day.

15. Stall Barrier (**Stall Warning / Stall Barrier System Check**: Pg. NI-15) .... TEST

    NOTE: Check on first flight of the day. If flight time for the day exceeds eight (8) hours, a second stall barrier check is required prior to the second flight of the day.

16. Flight Controls / Bungee / Rudder Torque Limiter ....CHECK

    Check flight controls for freedom and correct movement over full range of motion while observing Marshaller.

    NOTE: While performing the elevator check, pull the yoke aft and then release. The yoke should slowly fall forward until the elevator surface reaches its stop. A failed bungee has shown that when the yoke reaches the forward stop, there is a slight hesitation and the yoke cycles approximately one inch aft then forward. For a normal bungee, there should not be any hesitation or aft movement after the yoke is released. Any windy conditions may invalidate the yoke cycling test.

17. Yaw Damper...ON
18. Nose Wheel Steering ....ON
19. Pedal Steering Disconnect Switch .... ON / LIGHTS OUT
20. Auxiliary Hydraulic Pump .... ARMED
21. Brake Test Switch (BITE) / Anti-Skid Test Switch........................... ....PRESS, THEN RELEASE

END

Taxi / Before Takeoff

AFM 2-04-20

1. Transponder .... AS REQUIRED
2. Exterior Lights.. AS REQUIRED

   NOTE: Limit ground operation of landing lights to five (5) minutes.
3. Cowl / Wing Anti-Ice .... AS REQUIRED

   NOTE: Select cowl / wing anti-ice ON using engine bleed air only.
4. Brakes..CHECK
5. Slip Indicators / Compasses / Flight Instruments ....CHECK

   NOTE: For SPZ-8400 equipped airplanes, the external slip indicator is removed from the PFD and replaced by an electronic slip indication just below the roll pointer on each PFD ADI.

   NOTE: If flight instruments are inoperative, check the AOA indicator. If a high angle-of-attack is indicated, briefly pressing the respective AOA TEST button will slew the AOA probe to a lower angle-of-attack, returning flight instruments to normal operation.

   NOTE: If taxi operations are conducted with engine bleed air as source for ECS pack during warm weather operations, it is recommended that one throttle be advanced above idle with the isolation valve OPEN and opposite engine bleed air OFF to provide cooling air flow to the cabin.
6. Thrust Reversers Operational Check (1st Flight of Day) COMPLETE
7. Thrust Reverser Lights ....CHECK (EVERY FLIGHT)
   A. REV ARM ....ON
   B. REV UNLOCK / REV DEPLOY ....OUT

      NOTE: If either or both UNLOCK or DEPLOY lights are ON, maintenance is required before flight.
8. Fuel Temperature ....CHECK
9. Crew Briefing / EPR / V Speeds..................................... BRIEFED
10. Trim Settings (3) .... SET
11. BTMS OVHT / BRAKE OVHT Message..................CHECK / OUT

    NOTE: SPZ-8000 equipped airplanes SN 1156 and subs and SN 1000 through 1155 having ASC 167. For SPZ-8400 equipped airplanes, BTMS display is incorporated in the BRAKES system page.
12. Flaps / Stabilizer .... SET TAKEOFF
13. Engine Instruments..CHECK

14. Hydraulic Pressures (COMB / FLT / UTIL / AUX) .... CHECKED (3000 / 3000 / 0 / 0)
15. APU ....AS DESIRED
16. Flight Guidance Panel .... SET
17. Warn Inhibit ....ON

END

Taxi Operations With APU Air On

AFM 2-08-70

To achieve better cabin cooling during ground operation, it is recommended that APU be used as the air source for the air conditioning system.

To preclude APU temperature transients and cabin pressurization surges, the following procedures are recommended.

Before Taxi:

1. APU Air Switch ....ON
2. Engine Bleed Air Switches .... OFF
3. Taxi Operations .... AS REQUIRED

Before Takeoff:

1. Engine Bleed Air Switches ....ON
2. APU Air Switch .... OFF
3. APU .... AS REQUIRED

END

Line Up

AFM 2-04-30

1. Engine Bleed Air Switches ....ON
2. APU AIR / Isolation Valve...................................... OFF / CLOSED
3. Exterior Lights.. AS REQUIRED
4. Ground Spoilers... ARMED

   NOTE: Advance power levers before arming spoilers. Avoid retarding power levers to idle to prevent inadvertent ground spoiler deployment.

   NOTE: At sixty (60) knots, the pilot shall confirm that the elevators are free and the yoke has reached the neutral position.

   NOTE: If the Flight Power Shutoff Handle is pulled at rotation due to a flight control problem, high pull forces will be required to achieve the takeoff attitude. There will be a delay in airplane rotation and, once airborne, a push force will be necessary to maintain the climb attitude. Application of forward trim will be required shortly after becoming airborne. To avoid running out of forward trim, reduce speed as necessary.

5. Transponder / TCAS... ON / ON
6. Crew Alerting System ....CHECK
7. Air Start Ignition .... AS REQUIRED

   NOTE: It is recommended that Air Start Ignition be selected ON for takeoff on a runway with standing water, slush, or snow.

8. Autothrottle .... ARM / ENGAGED (IF DESIRED)

   NOTE: On SPZ 8000 equipped airplanes, the autothrottle will annunciate “HOLD” at approximately 60 knots and will maintain power lever “HOLD” unless selected to another mode after attaining 400 ft. AGL.

   NOTE: On SPZ 8400 equipped airplanes, the autothrottle will maintain takeoff EPR above 400 ft. AGL unless selected to another mode after attaining 400 ft. AGL.

9. Departure Runway Alignment .... BOTH PILOTS CONFIRM

END

Notes

Climb
AFM 2-05-10

1. Landing Gear .... UP
2. Flaps .... UP
3. Flight Guidance Panel .... SET
4. Exterior Lights .... AS REQUIRED
5. Ignition .... OFF
6. Ground Spoilers .... OFF
7. BTMS OVHT / BRAKE OVHT Message .... CHECK / OUT

   NOTE: SPZ-8000 equipped airplanes SN 1156 and subs and SN 1000 through 1155 having ASC 167. For SPZ-8400 equipped airplanes, BTMS display is incorporated in the BRAKES system page.

8. Pressurization .... CHECK
9. Engine Climb Power / Autothrottle .... SET / AS REQUIRED
10. Engine Synchronizer .... AS REQUIRED
11. Altimeters (3) ....
    .... SET & CROSS-CHECKED (AT TRANSITION ALTITUDE)
12. APU .... SHUT DOWN PRIOR TO 30,000 FT

    NOTE: Shut down APU prior to reaching 30,000 ft. if not required for electrical power.

END

Cruise
AFM 2-05-20

1. Power .... SET FOR CRUISE
2. Pressurization .... CHECK
3. Panel Sweep .... COMPLETE

   NOTE: A panel sweep or a check for normal system operation and indication should be accomplished at top-of-climb, top-of-descent, and at regular intervals between top-of-climb and top-of-descent.

Continued on next page →

4. FMS Fuel Quantity ....UPDATE

   NOTE: The flight crew should perform hourly updates to the FMS fuel quantity using data from the FQMS. On FMS PERF INT Page 5/5, perform a delete on line select key 2L. If the difference between gauge fuel and computed fuel seems unreasonable, consider a possible fuel leak. See **Fuel Leak In Flight**, page EF-14.

END

Descent

AFM 2-05-30

1. Crew Briefing (VREF / Go-Around Power) ....BRIEFED
2. FMS ....ARRIVAL SET
3. Flight Instruments.. SET / AS REQUIRED
   - A. NAV AIDS ....TUNED AND INDENTIFIED
   - B. Course Selection (using PREVIEW mode).................................. .... INBOUND COURSE
   - C. DH / MDA...SET
   - D. Marker Beacons.. SELECTED
4. Cowl / Wing Anti-Ice .... AS REQUIRED
5. Pressurization.. SET

   CAUTION: IF ON MANUAL PRESSURE CONTROL, MONITOR CLOSELY TO ENSURE LANDING UNPRESSURIZED WITH THE OUTFLOW VALVE FULLY OPEN.
6. Circuit Breakers ....CHECK
7. Fuel Boost Pumps .... ALL ON
8. Nosewheel Steering ....ON
9. Parking Brake / Accumulator.................................. OFF / 3000 PSI

END

Approach - In Range

AFM 2-05-40

1. Altimeters (3) ....SET & CROSS-CHECKED (AT TRANSITION LEVEL)
2. Engine Synchronizer ....OFF
3. Flaps ....AS REQUIRED
4. VREF / Go-Around Power... CHECKED
5. Hydraulic Pressure ....CHECK
6. Exterior Lights..AS REQUIRED
7. Auxiliary Hydraulic Pump...ARMED

END

Before Landing

AFM 2-05-50

1. Landing Gear..DOWN / 3 GREEN
2. Crew Alerting System ....CHECK
3. Nutcracker ....TEST

   CAUTION: DO NOT ARM GROUND SPOILERS IF NUTCRACKER SWITCH TEST IS UNSUCCESSFUL.
4. Ground Spoilers...ARMED

   NOTE: If touch and go landing is to be performed, GND SPLR should be OFF for this maneuver. Manual spoiler landing distance should be taken into account.
5. Flaps .... SET FOR LANDING

   CAUTION: DO NOT MOVE REVERSE THRUST LEVERS OUT OF THE FORWARD THRUST POSITION PRIOR TO TOUCHDOWN.

   NOTE: Maintain a minimum 67% HP RPM until landing.
6. WARN INHIBIT .... INHIBIT

Continued on next page →

7. Air Start Ignition .... AS REQUIRED

   NOTE: It is recommended that Air Start Ignition be selected ON for landing on a runway with standing water, slush, or snow.

   NOTE: Recommended final approach speed is VREF plus 10 knots. If gusty wind conditions exist, add ½ of the difference between the steady state wind and gust (maximum of additional 10 knots of gust additive). VREF will still be target speed at the threshold.

END

EGPWS Alerts

AFM 2-05-60

EGPWS Caution:

When an EGPWS CAUTION occurs, adjust the airplane flight path until the CAUTION alert ceases.

EGPWS Warning:

If an EGPWS WARNING occurs, follow the escape maneuver steps below until all alerts cease. Unless operating in Visual Meteorological Conditions (VMC) and / or the pilot determines based on all available information, that turning in addition to the vertical escape maneuver is the safest course of action, only the vertical escape maneuver is recommended.

CAUTION: THE TERRAIN DISPLAY IS INTENDED TO SERVE AS A SITUATIONAL AWARENESS TOOL ONLY, AND MAY NOT PROVIDE THE ACCURACY AND / OR FIDELITY ON WHICH TO SOLELY BASE TERRAIN AVOIDANCE MANEUVERING DECISIONS.

Vertical Escape Maneuver:

1. Autopilot ....DISCONNECT
2. Power ....MAXIMUM THRUST (GO-AROUND POWER)
3. Pitch Attitude ....ROTATE TO 3 TO 4 DEGREES PER SECOND TO ATTAIN HIGHEST POSSIBLE VALUE

   A pitch attitude of 25 degrees has been demonstrated on the GIV at maximum landing weight with flaps DOWN (39°).

When stick-shaker is encountered, or as VREF is approached:

4. Pitch Rate / Angle Of Attack.. .... REDUCE TO INTERCEPT V_2 / VREF -20 KCAS

5. Flaps / Landing Gear ....DO NOT RETRACT UNTIL SAFE CLIMB-OUT IS ASSURED

END

TCAS II Flight Procedures

AFM 2-05-70

Upon initiation of an RA, the pilot flying should focus attention on flying the commanded maneuver. The airplane should be smoothly maneuvered to comply with the TCAS command and to promptly return to ATC clearance when the "CLEAR OF CONFLICT" message is received.

Compliance with a TCAS II resolution advisory (RA) is necessary unless the pilot considers it unsafe to do so, or unless the pilot has better information about the cause of the RA and can maintain safe separation (e.g., visual acquisition of and safe separation from a nearby airplane, obvious TCAS system failure, etc.).

WARNING: **NON-COMPLIANCE WITH A <u>CROSSING</u> RA BY ONE AIRPLANE MAY RESULT IN REDUCED VERTICAL SEPARATION; THEREFORE, SAFE HORIZONTAL SEPARATION MUST ALSO BE ASSURED BY VISUAL MEANS.**

CAUTION: ONCE A NON-CROSSING RA HAS BEEN ISSUED, SAFE OPERATION COULD BE COMPROMISED IF CURRENT VERTICAL SPEED IS CHANGED, EXCEPT AS NECESSARY TO COMPLY WITH THE RA. THIS IS BECAUSE TCAS II-TO-TCAS II COORDINATION MAY BE IN PROGRESS WITH THE INTRUDER AIRPLANE, AND ANY CHANGE IN VERTICAL SPEED THAT DOES NOT COMPLY WITH THE RA MAY NEGATE THE EFFECTIVENESS OF THE OTHER AIRPLANE'S COMPLIANCE WITH ITS RA.

NOTE: The consequences of not following an RA may result in additional RAs in which aural alert and visual annunciations may not agree with each other.

END

All Engines Operating Go Around Procedure AFM 2-05-80

In the event that an approach is discontinued, proceed as follows:

1. TO / GA Button .... PRESS

   NOTE: The autothrottle, if engaged, automatically advances to go-around thrust, and the autopilot, if engaged, will disengage.

2. Airspeed ....VREF +10 KNOTS

   NOTE: Recommend final approach speed is VREF +10 knots. If winds are in excess of 10 knots, or gust conditions are present, add ½ of the steady state wind above 10 knots plus the full gust value to a maximum additive of 20 knots (VREF +20) e.g., if winds are reported as "14 gusting to 20 knots" the total additive to VREF is "+10 +2 +6 = 18". VREF will still be target speed at the threshold.

3. Power .... GO-AROUND THRUST (IF REQUIRED)

   CAUTION: DO NOT ATTEMPT A GO-AROUND WITH LESS THAN 600 LBS OF FUEL INDICATED IN EITHER FUEL TANK.

   NOTE: In the event a go-around is performed because of a balked landing (after touchdown on runway), select GND SPLR – OFF.

4. Flaps........ 20° ONCE GO-AROUND ATTITUDE IS ESTABLISHED

5. Landing Gear..
   .... RETRACT WHEN POSITIVE RATE OF CLIMB IS ATTAINED

6. Flaps...................................... UP WHEN VREF +20 IS ATTAINED
   Maintain speed for adequate stall margin.

7. Power .... AS REQUIRED

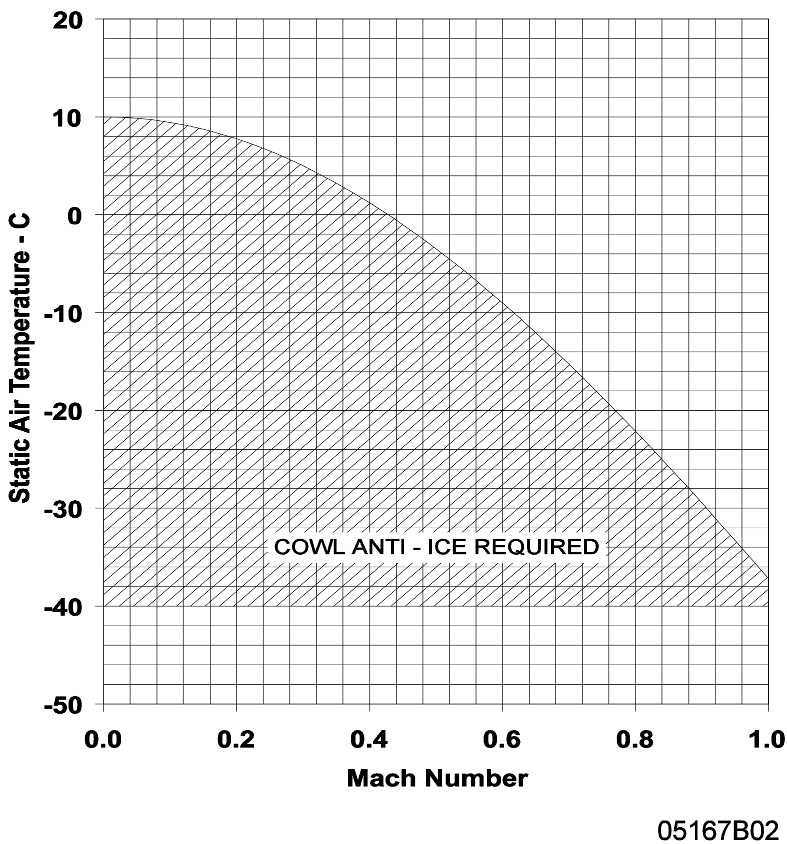
END

Temperature Range for Cowl Anti-Icing

AFM 1-30-30

Use of the cowl anti-ice system is required:

- When indicated below in the **Temperature Range for Cowl Anti-Ice** chart
- For taxi and takeoff, when static air temperature (as indicated on FMS, PROGRESS, Page 2, AIR DATA, 1/1) indicates less than +10°C down to -40°C and visible moisture or precipitation is present
- In flight, when visible moisture or precipitation is present, or when signs of icing are observed. (Ice accretion may be observed on wings or windshield edges.)



END

Traffic Pattern

AFM 2-07-10

Takeoff:

1. Gear .... UP
2. Flaps .... UP
3. Guidance Panel .... SET
4. Climb Power .... SET
5. GND SPLR .... OFF

Pattern:

6. Approach Briefing .... ACCOMPLISHED
7. FMS .... ARRIVAL SET
8. Flight Instruments .... SET / AS REQUIRED
9. Flight Observer Seat Position .... CHECK

Landing:

10. Landing Gear .... DOWN / 3 GREEN
11. Nutcracker .... TEST
12. GND SPLR .... ARMED
13. Brakes / Hydraulics .... CHECKED
14. Flaps .... SET FOR LANDING
15. WARN INHIBIT .... INHIBIT

Taxi-Back:

16. GND SPLR .... OFF
17. Flaps .... SET FOR TAKEOFF
18. LDG / STROBE Lights .... OFF
19. Brake Temps .... CHECKED
20. Transponder .... STANDBY
21. GPWS / GND SPLR FLAP ORIDE .... OFF
22. Trim Settings (3) .... SET
23. Takeoff Briefing .... ACCOMPLISHED
24. FMS .... SET

25. Flight Instruments .... SET
26. Guidance Panel .... SET
27. WARN INHIBIT .... INHIBIT
28. Flight Observer Seat Position .... CHECK

Line Up:

29. COWL ANTI ICE (2) / WING ANTI ICE (2) .... AS REQUIRED
30. Exterior Lights .... SET
31. Transponder .... ON
32. Radar .... AS REQUIRED
33. GND SPLR .... ARMED
34. V-Speeds .... CHECKED / BOXED
35. EICAS .... CHECKED

END

Notes

After Landing

AFM 2-06-10

1. Ignition .... OFF
2. Transponder .... AS REQUIRED
3. Flaps .... AS DESIRED
4. COWL / WING ANTI-ICE / ANTI ICE HTRS ....AS REQD / OFF
5. Fuel Boost Pumps .... OFF (ONE EACH SIDE)
6. Landing Lights .... OFF
7. Ground Spoilers.. OFF
8. BTMS OVHT / BRAKE OVHT Message.................. CHECK / OUT

   NOTE: SPZ-8000 equipped airplanes SN 1156 and subs and SN 1000 through 1155 having ASC 167. For SPZ-8400 equipped airplanes, BTMS display is incorporated in the BRAKES system page.

   NOTE: If landing required hard braking, monitor temperatures to ensure brake temperatures have peaked and are decreasing. Note peak temperature for use in determining turn around time and brake cooling requirements. See **Brake Kinetic Energy and Carbon Brake Cooling**, page PC-15.

9. APU .... AS DESIRED
10. Auxiliary Power / APU Air / Engine Bleeds................ AS DESIRED

   NOTE: With APU Alternator selected ON and Yaw Damper selected OFF, RIGHT Converter may be selected OFF and RIGHT engine may be shut down for taxi operations. See **Single Engine Taxi** checklist, page NG-5.

   NOTE: If APU air is selected ON after landing, select both engine bleed air switches to OFF. This will prevent thermal transients on the APU or possible damage to the APU when the power levers are moved above idle.

11. Radar (BOTH).. STANDBY

END

Shutdown

AFM 2-06-20

☐ = Quick Turnaround Items

1. Parking Brake / Pressure.. ON / 3000 PSI
2. Transponder .... STANDBY
3. Radar .... OFF

4. ELECTRIC MASTER LEFT PWR / RIGHT PWR Switches ..... OFF
5. HP Fuel Cocks ....SHUT

   NOTE: It is required to run the engine(s) at idle for one minute before shutting down (taxi time may be credited).

6. TGT .... MONITOR
7. Radios .... OFF
8. **BTMS OVHT / BRAKE OVHT** Message.................. CHECK / OUT

   NOTE: SPZ-8000 equipped airplanes SN 1156 and subs and SN 1000 through 1155 having ASC 167. For SPZ-8400 equipped airplanes, BTMS display is incorporated in the BRAKES system page.

9. IRSs / FMSs .... OFF
10. Exterior Lights .... AS REQUIRED
11. Fuel Boost Pumps .... OFF
12. Cockpit Lights ....AS DESIRED
13. Oxygen .... OFF
14. Nose Wheel Steering .... OFF
15. Display Units .... OFF
16. CABIN / GALLEY / RADIO MASTER Switches .... OFF
17. ELECTRIC MASTER AUX PWR... OFF
18. Emergency Power Switch .... OFF
19. APU ....OVERSPEED / TEST
20. Standby Attitude Indicator ....CAGED / AS REQUIRED
21. ENGINE BLEED AIR Switches (2)... OFF

    NOTE: Selecting ENGINE BLEED AIR switches OFF will help extend life of the bleed air valves by de-energizing the solenoids.

22. APU AIR .... OFF

    NOTE: APU air switch position should not be changed just prior to shutdown. After shutdown, wait until RPM indicates less than 95% before changing APU air switch position.

23. APU MASTER Switch ....OFF (APU RPM LESS THAN 10%)

    NOTE: **(For airplanes having ASC 465 (36-150[G] APU)):** The amber **APU MASTER WARN** CAS message will not be displayed if the APU MASTER switch is inadvertently left ON after shutdown.

24. BATT 1 / BATT 2 Switches.. OFF

25. GUST LOCK .... ON

    CAUTION: ENSURE HYDRAULIC PRESSURE IS DEPLETED PRIOR TO ENGAGING GUST LOCK.

26. Chocks .... IN PLACE
27. Parking Brake .... OFF

END

Securing

OM 09-01-30

1. Auxiliary Power Switch .... OFF
2. APU .... OVERSPEED
3. Boost Pumps .... OFF
4. APU Air .... OFF
5. APU Master .... OFF
6. UTILITY PUMP .... NOT ARM
7. AUX PUMP .... NOT ARM
8. Cockpit Lights .... OFF
9. Both Batteries .... OFF
10. Gust Lock .... ON
11. IRS “ON BATT” Lights .... CHECK OUT
12. Parking Brake .... AS REQUIRED

END

Postflight

AFM 2-06-30

1. Engine Oil .... CHECK

   Check engine oil at the sight glass after the last flight of the day or at intervals not exceeding eleven (11) hours cumulative flight time.

   NOTE: For accurate readings, engine oil must be checked within 30 minutes after engine shutdown.

2. Brakes / Landing Gear .... INSPECT / PIN
3. Thrust Reversers .... CHECK / PROPERLY STOWED

   NOTE: If the lower thrust reverser door leading edge is sagged out of normal contour, report for maintenance action before next flight.

4. Exterior .... INSPECT
5. Forms And Records .... COMPLETE
6. Interior .... CHECK
7. Doors .... CLOSED

END

Transit Check

OM 09-03-80

The transit check is required by the Rolls Royce Tay Maintenance Manual. It may be performed by a qualified flight crew member. Make log book entry if required.

After engine shutdown at termination of the last flight of the day or at intervals not exceeding eleven (11.0) hours cumulative flight time:

1. Engine Oil .... CHECK / REPLENISH AS NECESSARY

   NOTE: For accurate readings, engine oil must be checked within 30 minutes after engine shutdown.

2. Oil Filter Differential Pressure Indicator (DPI) .... EXAMINE

   Examine the engine oil filter DPI to determine if oil filter blockage has occurred.

END

Flight Fault Summary Check

OM 09-03-70

After the airplane is on the ground and airspeed is less than 50 knots:

1. DO NOT turn off any airplane power (APU can be used for auxiliary power).

   NOTE: DO NOT turn off Electronic Flight Instrument System (EFIS) display.

2. Select any Maintenance Test (MAINT TEST) switch to ON.

   NOTE: MAINT TEST switches are located on both the left and right hand radio rack system test and monitor panels. On airplanes with ASC 221, a MAINT TEST switch is also located on Copilot's Aft Circuit Breaker Panel. Only one switch needs to be selected.

3. Disengage yaw damper.
4. On either the Pilot's or Copilot's Display Controller (DC), push the TEST button to display the TEST menu.
5. From the DC TEST menu, push the line select key adjacent to the MAINT option. This causes the MAINT TEST menu to be displayed on the DC.
6. From the DC MAINT TEST menu, push the line select key adjacent to the AFGCS option. This causes the AFGCS menu to be displayed on the DC.
7. From the DC AFGCS menu, push the line select key adjacent to the DOWN option once. This causes the MAINTENANCE TEST menu page to be displayed on Display Unit (DU) 4. On the MAINTENANCE TEST menu page, the SYSTEM TEST option is boxed.
8. From the DC AFGCS menu, push the line select key adjacent to the SELECT option once. This causes “05 FGC TEST” to be displayed on DU 4.
9. From the DC AFGCS menu, push the line select key adjacent to the UP option twice. This causes “50 FLIGHT FAULT SUMMARY” to be displayed on DU 4.
10. From the DC AFGCS menu, push the line select key adjacent to the SELECT option once. This causes the Flight Fault Summary to be displayed on DU 4.

11. The Flight Fault Summary displayed on DU 4 will be from either Flight Guidance Computer (FGC) 1 or FGC 2. Record all characters displayed, including any spaces between character groups.
12. From the DC AFGCS menu, push the line select key adjacent to the SELECT option once. This causes the Flight Fault Summary to be displayed on DU 4 for the other FGC. Again, record all characters displayed, including any spaces between character groups.
13. Select MAINT TEST switch to OFF.
14. Shut down airplane power if no longer required.

END

Alternate Normal Procedures Index

Cold Start
AFM 2-08-10

In cold ambient temperatures (when oil temperature is minus 10°C or less) refer to **All Weather Operations and Procedures in the GIV Operating Manual**.

CAUTION: IF DEICING SOLUTION IS INADVERTENTLY SPRAYED INTO THE ENGINE / APU INLETS OR CONTACTS THE EXHAUST WHEN ENGINES OR APU ARE OPERATING, POTENTIALLY UNSAFE CONDITIONS COULD DEVELOP IN THE CABIN. ENGINE / APU BLEEDS SHOULD BE CLOSED DURING DEICING OPERATIONS TO MINIMIZE THE RISK OF CABIN ENVIRONMENT CONTAMINATION.

END

External Air Start
AFM 2-08-20

1. External Air Source ....CONNECTED
2. Normal Engine Ground Start Procedure .... PERFORM
   Either engine, or both in turn, may be started from an external air supply.
   NOTE: Depending on the source of external air, the engine start cycle may take longer than normal. Refer to **GIV AFM Section 1, Engine Starter Duty Limits**.

END

Crossbleed Start
AFM 2-08-30

After starting one engine from either APU or external air supply:

1. ENGINE BLEED AIR (engine to be started)............................. OFF
2. ENGINE BLEED AIR (operating engine)....................................ON
3. Running Engine Power Lever ....
   ....ADVANCE TO 25 TO 30 PSI BLEED AIR PRESSURE

   CAUTION: APPROXIMATELY 85% HP RPM IS REQUIRED FOR CROSSBLEED STARTING. ENSURE AREA BEHIND AIRPLANE IS CLEAR BEFORE ATTEMPTING THIS PROCEDURE.

4. Engine Not Running ....
   ....START, USING NORMAL ENGINE-START PROCEDURES
   NOTE: See **Starting Engines** checklist, page NC-6.

After Starting Other Engine:

5. Power Levers .... IDLE

END

Engine Cranking Cycle

AFM 2-08-40

CAUTION: CONTINUED USE OF THE STARTER IS LIMITED TO THREE (3) CRANK-CYCLES, WITH A MAXIMUM OF THIRTY (30) SECONDS PER CYCLE. DELAY THREE (3) MINUTES BETWEEN START-CYCLES. AFTER THREE (3) START-CYCLES, DELAY USE OF THE STARTER FOR AT LEAST FIFTEEN (15) MINUTES.

1. HP Fuel Cock .... SHUT
2. Power Lever .... IDLE
3. APU Air / Bleed Air ....ON
4. Boost Pump ....ON
5. Engine Crank Master ....ON
6. Engine Start Switch ....ON
7. Start Valve Message ....ON
8. Engine Rotation (LP, HP) .... CONFIRM
9. Oil Pressure .... INDICATING
10. Engine Crank Master ....OFF (AFTER THIRTY [30] SECONDS MAX)

END

Engine Start - Battery Power Only

AFM 2-08-50

Use this checklist in situations where the only electrical source available is the airplane's batteries and an air source is available from either APU or external air cart.

The checklist calls for switches to be selected before selecting batteries ON. The intent is to reduce drain on the batteries while performing normal checklist functions.

If the APU is the source of air for engine start, expedite steps between APU start and the first engine start. This reduces drain on batteries.

Complete all safety checks and as much of **Before Starting Engines** checklist (page NC-1) as possible.

1. Chocks .... IN PLACE
2. HP Fuel Cocks .... SHUT
3. Circuit Breakers .... CHECK
4. EPMP Bus Switches .... AUTO
5. APU Air .... OFF
6. Beacon .... ON
7. Standby Engine Instruments .... MANUAL
8. Standby Warning Lights Panel .... MANUAL
9. Left Main Boost Pump .... ON
10. Fuel Crossflow .... OPEN
11. Engine Temperature Controls .... ON
12. Engine Start Master .... ON
13. Air Conditioning Packs .... OFF
14. Electrical Power Master Switch ... ON (ENGINE TO BE STARTED)
15. Gust Lock .... OFF
16. Battery 1 and 2 Switches .... ON
17. Engine Fire Test .... COMPLETE

If APU is used for engine start, continue with Step 18. If external air is used, proceed to Step 22.

18. APU Fire Warning .... TEST
19. APU Master Switch .... ON
20. APU Oil Pressure Low Light .... ON
21. APU .... START

After APU is stabilized one (1) minute:

22. APU AIR / External AIR .... ON (25 PSI MINIMUM)
23. Air Start Ignition For Engine To Be Started .... ON
24. Engine Start Switch .... PRESS

Using standby engine instruments, at 15% HP RPM minimum with LP RPM indicating an RPM value other than LO:

25. HP Fuel Cock .... OPEN
26. TGT.. MONITOR (700° MAX)
    NOTE: As engine accelerates to idle, the converter will be operative.
27. Battery Ammeters ....CHECK
28. Air Start Ignition .... OFF
29. DUs...ON
30. EICAS ....CHECK SVO and IGN OUT
31. Remaining **Before Starting Engines** Checklist Items (pg. NC-1)..... ....COMPLETE AS APPROPRIATE BEFORE STARTING SECOND ENGINE

END

Single Engine Taxi

AFM 2-08-60

Single engine taxi is recommended utilizing the left engine for power and hydraulics. Additionally, the APU should be running and selected ON for electrical power in the event of a left alternator/converter failure.

Taxi-Out:

1. Left Engine .... RUNNING
2. Left Converter...ON
3. APU .... RUNNING
4. AUX Power ....ON
5. Yaw Damper...OFF

Before Takeoff:

6. Right Engine .... START
   Allow one (1) minute for engine to stabilize before takeoff.
7. Right Converter ....ON
8. APU Air...OFF
9. APU .... AS REQUIRED
10. Yaw Damper...ON

Taxi-In:

Allow one (1) minute for cool-down at idle thrust, on right engine, prior to shutdown.

1. APU ....START
2. AUX Power ....ON
3. Right Converter .... OFF
4. Yaw Damper .... OFF
5. Right Engine.. SHUT DOWN

END

Battery Charging Using APU or External AC Power

1. ELECTRIC MASTER AUX PWR... ON

   NOTE: Battery charging is possible using APU alternator or external AC power only.

2. BATT 1 or BATT 2.. ON

   NOTE: If charging of only one (1) battery is desired, pull appropriate BATT CHGR circuit breaker on PDB. *For airplanes having ASC 54*, if charging of only one (1) battery is desired, select appropriate BATT switch ON.

3. Battery Ammeter(s) .... MONITOR

   NOTE: The battery chargers may use up to 34 volts for battery charging. Maximum current for battery charging is limited to 38 amps.

END

GIV QFE Operations

AFM 2-08-80

Takeoff:

1. Set pilot’s and copilot’s altimeter settings to QNH (if available). If QNH is not available, set altimeters to achieve published field elevation.
2. Perform Takeoff Initialization and verify Takeoff Data to be correct.
3. On Display Controller, manually "box" takeoff V speeds.

4. Set desired Flight Level in the AIPLANE / CABIN window along with the desired rate for cabin rate of change in the RATE LIMIT window.
5. Set pilot's and copilot's altimeter setting to QFE for takeoff.
6. During TAXI checklist, verify that the FLIGHT mode is selected and that the DFRN PRESS does not exceed 0.30 PSID.
7. Select TERRAIN INHIBIT ON if operating with EGPWS Software Version –104 -104.

Climb:

1. When clear of traffic pattern, select AUTO V-SPEEDS on Display Controller.
2. At Transition Altitude, select appropriate altimeter setting (29.92 / 1013).
3. Select TERRAIN INHIBIT to OFF if previously selected ON before takeoff.

Approach:

1. Set QFE altimeter setting when directed by ATC.
2. Set QNH in the BARO CORR window of Cabin Pressure Selector Panel.
3. Set published Landing Field Elevation in the LANDING ELEV window.
4. Set desired RATE in the RATE Limit window.
5. Select TERRAIN INHIBIT to ON if operating EGPWS Software Version –104-104.
6. Verify CPCS is in Landing mode. Verify DFRN PRESS less than 0.30 PSID prior to landing.

END

RNP 0.3 Approach Procedures (RNAV/VNAV) Approach To A Decision Altitude

AFM 2-08-90

1. Review the published approach.
2. Select the approach from the database and activate it.
3. Ensure Receiver Autonomous Integrity Monitoring (RAIM) is available so approach requirements can be met.
4. Set MDA or RAD ALT value to the published DA or reference radio altitude value.
5. When cleared for the approach, arm the LNAV mode (and VNAV mode if VNAV guidance is desired for the approach) on the Guidance Panel and set the Altitude Preselector to the Touchdown Zone Elevation to ensure continuous vertical guidance to the runway.
6. When within 2 miles of the Final Approach Fix (FAF), the FMS Approach light/FMS Approach message will illuminate. This is clearance to continue the approach to the published DA. If the FMS Approach light/FMS Approach message does not illuminate, the approach shall be abandoned.
7. When runway is in sight, disconnect autopilot/autothrottle and land. If runway not in sight at the DA (or MDA, as appropriate), execute the published missed approach.

END

High Elevation Airport Operations

AFM 2-08-130

Flight Crew Considerations:

Use of oxygen by the flight crew while performing high-workload tasks at high elevation airports or at field elevations for which the flight crew is not acclimated is highly recommended.

NOTE: Examine performance data thoroughly to determine the adverse effects of high density altitude on airplane performance.

Engine Start:

The following topics contain recommended changes to the engine starting procedures to high elevation airports. During use of these procedures, the flight crew shall be alert to higher-than-normal TGT indications or the possibility of a hot start.

CAUTION: IF THE POWER LEVER IS NOT AT IDLE, THE START WILL CONTINUE AND THE ENGINE WILL ACCELERATE TO THE THRUST SELECTED BY THE POWER LEVER. THIS IS NOT RECOMMENDED. ALWAYS ENSURE THAT POWER LEVERS ARE AT IDLE DURING STARTING.

CAUTION: CONTINUED USE OF THE STARTER IS LIMITED TO THREE (3) CRANK-CYCLES, WITH A MAXIMUM OF THIRTY (30) SECONDS PER CYCLE. DELAY THREE (3) MINUTES BETWEEN START ATTEMPTS. AFTER THREE (3) START-CYCLES, DELAY USE OF THE STARTER FOR AT LEAST FIFTEEN (15) MINUTES.

Right Engine Start:

CAUTION: WITH THE UTILITY PUMP OFF, ONLY THE PARKING BRAKE IS AVAILABLE TO HOLD THE AIRCRAFT. THE USE OF CHOCKS IS RECOMMENDED.

NOTE: Reduce electrical loads on APU alternator to allow APU to provide maximum airflow.

The flight crew shall be alert for higher-than-normal TGT indications or the possibility of a hot start.

1. UTILITY PUMP OFF/ARM..OFF
2. Fuel Boost Pumps ....ONE ON, REMAINING THREE OFF
3. Crossflow Valve (X FLOW)..OPEN
4. RAM AIR..RAM
5. R AIR START IGN (1144 & Subs., Airplanes with ASC 151).....ON
6. Maximum Motoring RPM (16-22% HP RPM)................ACHIEVED

At maximum motoring RPM:

7. R HP FUEL COCK ....OPEN
8. TGT..MONITOR

After the engine is stabilized at idle:

9. R AIR START IGN (1144 & Subs., Airplanes with ASC 151)...OFF
10. Utility Pump..ON

Left Engine Start:

CAUTION: USE ONLY ONE SOURCE OF BLEED AIR, EITHER APU BLEED AIR OR CROSSBLEED AIR, TO START ENGINE.

Perform an alternate engine starting procedure as follows:

1. Available Bleed Air (Right Engine, If Required).............INCREASE

2. Maximum Motoring RPM (16-22% HP RPM)................ACHIEVED
3. L AIR START IGN (1144 & Subs., Airplanes with ASC 151).....ON

At maximum motoring RPM:

4. L HP FUEL COCK.. OPEN
5. TGT .... MONITOR

After the engine is stabilized at idle:

6. L AIR START IGN (1144 & Subs., Airplanes with ASC 151)......OFF
7. Right Engine... IDLE
8. Utility Pump OFF/ARM .... ARM
9. RAM Air .... OFF

Taxi:

Ground idle speeds may be lower than those required to keep the alternators on line. It is recommended that the APU be left running with the APU alternator on line for all ground operations.

CAUTION: USE ONLY ONE SOURCE OF BLEED AIR, EITHER APU BLEED AIR OR ENGINE BLEED AIR, WHILE TAXIING TO PREVENT POSSIBLE DAMAGE TO THE APU.

Takeoff:

1. Certain high-elevation airports have preferential runways for takeoff and landing, i.e., upslope for landing and downslope for takeoff. Slope, headwind and tailwind conditions should be given due consideration.
2. Stabilize engine power at 1.5 EPR for 15 seconds and perform a rolling takeoff. With tailwind conditions, monitor LP RPM limits when setting final takeoff power, during takeoff run and during climb out. The Pilot Not Flying (PNF) should be briefed to monitor LP RPM during takeoff and should be ready to adjust power as necessary to avoid exceedances. The Pilot Flying (PF) should be aware that a red “ENGINE EXCEEDANCE” warning CAS message may occur during takeoff if LP RPM exceeds 95.5%. DO NOT BE COMPELLED TO ABORT THE TAKEOFF IF THIS MESSAGE OCCURS. This is especially true when using the autothrottle.
3. If COWL ANTI ICE or WING ANTI ICE is used for takeoff, select a minimum of 1.2 EPR or higher before selecting ANTI ICE to ON.
4. Expect slower-than-normal acceleration to 60 knots.

Descent, Approach and Landing:

1. It may be necessary to increase cabin altitude for landing.
2. If the Landing Field Elevation (LFE) approaches 9,000 ft MSL or higher, be prepared for a red “CABIN PRESSURE LOW” warning message to be displayed on CAS.
3. If the LFE approaches 13,000 ft MSL, automatic deployment of passenger oxygen masks is possible. The passenger masks may be deployed manually or portable oxygen bottles may be made available to the passengers to enhance passenger comfort.
4. The cockpit flight crew shall utilize oxygen any time the cabin altitude is 10,000 ft MSL or higher.
5. On approach, start the APU and select the APU alternator to ON.
6. On approach, landing and rollout, be aware of True Airspeed (TAS) and Ground Speed (GS). A 145 KCAS approach speed can translate to 175 KTAS. Ground speed amplified by tailwind conditions could exceed maximum tire speed on landing.
7. Expect slower than normal thrust reverser spool-up times.
8. Apply brakes at lower ground speeds (runway length permitting) to avoid excessive brake energy absorption.

END

Cold Weather Altimeter Setting Procedures AFM 2-08-100

EXTREME CAUTION SHOULD BE EXERCISED WHEN FLYING IN PROXIMITY TO OBSTRUCTIONS OR TERRAIN IN LOW TEMPERATURES. This is especially true in extremely cold temperatures that cause a large differential between the Standard Day temperature and actual temperature. This circumstance can cause serious errors that result in the airplane being significantly lower than the indicated altitude.

Temperature has an effect on the accuracy of altimeters and your altitude. The crucial values to consider are standard temperature versus the ambient (at altitude) temperature. It is this “difference” that causes the error in indicated altitude. When the air is warmer than standard, you are higher than your altimeter indicates. Subsequently, when the air is colder than standard you are lower than indicated. It is the magnitude of this “difference” that determines the magnitude of the error. When flying into a cooler air mass while maintaining a constant indicated altitude, you are losing true altitude. However, flying into a cooler air mass does not necessarily mean you will be lower than indicated if the difference is still on the plus side. For example, while flying at 10,000 feet (where **STANDARD** temperature is –5 degrees Celsius (C)), the outside air temperature cools from +5 degrees C to 0 degrees C, the temperature will nevertheless cause the airplane to be **HIGHER** than indicated. It is the extreme “cold” difference that normally would be of concern to the pilot. Also, when flying in cold conditions over mountainous country, the pilot should exercise caution in flight planning both in regard to route and altitude to ensure adequate enroute and terminal area terrain clearance.

The following table derived from ICAO formulas indicates how much error can exist when the temperature is extremely cold. To use the table, find the reported temperature in the left column, then read across the top row to locate the height above the airport/reporting station (i.e., subtract the airport/reporting elevation from the intended flight altitude). The intersection of the column and row is how much lower the airplane may actually be as a result of the possible cold temperature induced error.

The possible result of the above example should be obvious, particularly if operating at the minimum altitude or when conducting an instrument approach. When operating in extreme cold temperatures, pilots may wish to compensate for the reduction in terrain clearance by adding a cold temperature correction.

Continued on next page →

Cold Weather Altimeter Setting Procedures, ctd… AFM 2-08-100

Temp (°C)	Height Above Airport (Feet)						
	200	300	400	500	600	700	800
+10	10	10	10	10	20	20	20
0	20	20	30	30	40	40	50
-10	20	30	40	50	60	70	80
-20	30	50	60	70	90	100	120
-30	40	60	80	100	120	130	150
-40	50	80	100	120	150	170	190
-50	60	90	120	150	180	210	240
Temp (°C)	Height Above Airport (Feet)						
	900	1000	1500	2000	3000	4000	5000
+10	20	20	30	40	60	80	90
0	50	60	90	120	170	230	280
-10	90	100	150	200	290	390	490
-20	130	140	210	280	420	570	710
-30	170	190	280	380	570	760	950
-40	220	240	360	480	720	970	1210
-50	270	300	450	590	890	1190	1500

END

Use Of The Rudder In Flight AFM 2-08-110

Flight crews should use caution when operating the rudder in flight. The rudder limiter design protects the vertical fin of prolonged maximum rudder inputs in a single direction only. If the rudder is deflected to maximum deflection then suddenly reversed to the maximum deflection in the opposite direction, the vertical fin can be overstressed. Additionally, the vertical fin can be overstressed by a pilot “walking” the rudder either abruptly or in small increments in tune with the yaw response. The issue is magnified at high speed.

There are 3 rules of thumb to follow when using the rudder in flight:

1. Maximum deflection of the rudder in a single direction may be used to control the airplane when needed such as in the case of an engine failure at takeoff. Do not return the rudder past neutral when completing the maneuver.

Continued on next page →

Use Of The Rudder In Flight, ctd… AFM 2-08-110

2. Do not walk the rudder in tune with the yaw response, either with abrupt or smooth inputs
3. If you follow the above two rules and continue to fly the airplane within the published envelope using normal airmanship, you will not overstress the airplane.

   NOTE: Small rudder doublets for the purposes of flight test of yaw damper effectiveness and response are allowed.

END

Thrust Reverser Lockout OM 09-03-10

1. **General:**

   If a Thrust Reverser (T/R) system malfunction is suspected or if a failure prevents normal function of either or both T/Rs (including a no deploy condition), the airplane **cannot** be dispatched until the condition is corrected. Gulfstream recommends contacting Gulfstream Technical Operations, the Operator's Area Field Service Representative or the Operator's Home Base of Operations if a T/R system malfunction is suspected or a failure is detected.

   Thrust reverser lockout procedures for the Gulfstream IV airplane, although available to increase the level of dispatch capability, are a complex procedure. An improperly locked down T/R may cause extensive damage to the T/R system, spurious UNLOCK or DEPLOY warnings to be displayed to the flight crew or, in the worst case, actual inadvertent deployment of a T/R door. Therefore, T/R lockout procedures are to be performed only by properly certificated Airframe and Powerplant Technicians in accordance with Chapter 78 of the latest approved version of the Gulfstream Aerospace GIV Aircraft Maintenance Manual.

   With one reverser inoperative, the flight crew must be aware of possible asymmetric braking effects if the operative reverser is deployed on landing. If desired, lockdown of a properly operating T/R can be accomplished to avoid possible asymmetric braking effects. However, Gulfstream does not recommend this in the event that the operational T/R is needed for any reason during period the single malfunctioning T/R is locked down.

Continued on next page →

2. **References:**
   - GIV Master Minimum Equipment List, System 78
   - GIV Airplane Flight Manual, Limitations, Section 01-78-10: Thrust Reversers
   - GIV QRH Section EC (Engines): Thrust Reverser Abnormal / Emergency Procedures

END

Engine Start - Manual Operation Of Start Valve

OM 09-03-40

1. **General:**

   Procedures for manually overriding the start-valves on the Gulfstream IV are included to enable the flight crew to assist and supervise ramp service personnel when the airplane is away from its fixed base of operations. The procedures provided in this section are general in nature and are intended to increase the level of dispatch capability. Should the procedures presented in this section conflict with the latest approved version of the Gulfstream Aerospace GIV Aircraft Maintenance Manual, those procedures shall take precedence over the procedures presented in this section in any and all cases.

   A. **Overview:**

      This procedure provides an alternate method to start the engine if the start-valve has failed in the closed position and engine cannot be started using normal Airplane Flight Manual (AFM) procedures.

      Effective electronic voice communications and coordination between cockpit and ground crews will be necessary for this procedure.

      If the engine fails to start but IGN and SVO and IGN icons are displayed, the failed, closed, start-valve may be stuck due to condensation and/or corrosion. The start-valve indication comes on with 6° of valve rotation; therefore, the start-valve open indication (SVO icon) may be displayed but the valve may be almost fully closed.

Continued on next page →

Manually exercising the start valve in accordance with Paragraph 2.C. may “free up” the start valve, allowing the engine to be started normally.

If the engine does not start normally after manually exercising the valve or the IGN and SVO indications are not displayed, Paragraph 2.D. provides the procedure to start engine with the valve manually opened.

Normal ground/inflight operation of systems using bleed air is not affected by this procedure.

CAUTION: IF THE START-VALVE HAS FAILED IN THE OPEN POSITION, REPLACE VALVE PRIOR TO AIRCRAFT DISPATCH.

B. Applicability:

This procedure is applicable to left engine and right engine start-valves.

C. References:

- **GIV Master Minimum Equipment List, System 80**
- **GIV Airplane Flight Manual, Limitations, Section 01-80-10: Starter Duty**
- **GIV QRH Section EC (Engines): Start-Valve Failure**

2. Procedure:

A. Tools and Equipment Needed:

Part Number:	Nomenclature:	Remarks:
N/A	3/8” wrench or 3/8” socket / breaker bar combination	Used to position manual drive shaft.
DAVID CLARK Part No. H3310 or Equivalent	Headset	Used with external communications cord to establish communication with cockpit crewmember.
DAVID CLARK Part No. C-31-** (where ** is length in feet) or equivalent	Communication Cord	Used with headset to establish communication with cockpit crewmember.

NOTE: Do not use a ratchet for these procedures.

Continued on next page →

B. Preparation:

When properly configured, the left and right engine start-valves are normally commanded open when the L ENG START / R ENG START switches are depressed. This is confirmed by a blue (HP RPM < 44.5%) or flashing amber (HP RPM ≥ 44.5%) SVO icon displayed on EICAS adjacent to the respective HP tachometer. If the start-valve is confirmed as failed closed, proceed as follows:

(1) Ensure airplane is safe for performing procedure.

(2) Assess situation. See **Start Valve Failure**, page EC-19.

C. Manual Operation of Start Valve (IGN and SVO Icons Displayed During First Start Attempt): (See Figure 1)

CAUTION: DO NOT USE A RATCHET TO OPERATE VALVE. USE A BREAKER BAR, APPROPRIATE SIZE EXTENSION AND SOCKET TO OPERATE VALVE.

(1) Ensure all sources of air to bleed air manifold are removed.

(2) Ensure L ENG START / R ENG START switches are OFF.

(3) On appropriate engine cowl, open start-valve access panel.

(4) Install socket, extension and breaker bar on start valve manual wrenching feature.

NOTE: Manual wrenching feature is located with position indicator switch on start valve.

(5) Rotate valve to OPEN and CLOSED indicated positions several times. Note any resistance or binding (other than normal 50 pounds spring tension). If binding is noted, rotate valve to open and closed positions until valve travel is smooth.

(6) Ensure valve is in CLOSED indicated position.

(7) Remove tools, check for presence of foreign objects then close engine cowl start-valve access panel.

(8) Clear area of personnel and foreign objects.

(9) Attempt normal engine start using QRH start procedure. If engine will not start, perform Paragraph 2.D.

Continued on next page →

D. Manual Opening and Closing of Start Valve: (See Figure 1)

WARNING: **THIS PROCEDURE IS PERFORMED IN THE VICINITY OF AN OPERATING AIRPLANE ENGINE. REMAIN CLEAR OF ENGINE AIR INLET AT ALL TIMES. FAILURE TO COMPLY CAN RESULT IN SERIOUS INJURY OR DEATH.**

WARNING: **EXTREME CARE MUST BE EXERCISED TO GUARD AGAINST EMISSION OF HOT EXHAUST GAS FROM THE STARTER WHEN MANUALLY OPENING OR CLOSING THE START VALVE. USE A EXTENSION LONG ENOUGH TO ENSURE A SAFE DISTANCE FROM STARTER VALVE EXHAUST.**

CAUTION: DO NOT USE A RATCHET TO OPERATE START-VALVE. USE A BREAKER BAR, APPROPRIATE SIZE EXTENSION AND SOCKET TO OPERATE VALVE.

CAUTION: CLOSE START-VALVE AT OR BEFORE 40% HP RPM. THE STARTER CAN OVERHEAT PAST 40% HP RPM.

CAUTION: DURING MANUAL OPERATION OF START-VALVE, BLEED AIR PRESSURE ENTERING THE VALVE WILL NOT BE REGULATED.

CAUTION: CONTINUED USE OF THE STARTER IS LIMITED TO THREE (3) CRANK-CYCLES WITH A MAXIMUM OF THIRTY (30) SECONDS PER CYCLE. DELAY THREE (3) MINUTES BETWEEN START ATTEMPTS. AFTER THREE (3) CYCLES, DELAY USE OF THE STARTER FOR AT LEAST FIFTEEN (15) MINUTES.

CAUTION: APU BLEED AIR AND ENGINE START-SWITCHES MUST BE OFF FOR THIS PROCEDURE.

(1) Position one crewmember in cockpit to perform engine start and direct opening and closing of valve.

(2) Establish communication between cockpit crewmember and outside crewmember.

(3) Start opposite engine using normal AFM procedures.

(4) Select APU BLEED AIR off or shut down APU.

(5) Select both L ENG and R ENG BLEED AIR switches to OFF.

(6) Select both L PACK and R PACK switches to OFF.

Continued on next page →

(7) On appropriate engine cowl, open start-valve access panel.

(8) Using socket, extension and breaker bar on start-valve manual wrenching feature, position valve to OPEN and hold.

(9) Start engine using cross bleed starting technique as follows:

(a) Notify outside crewmember that engine is to be started.

(b) Increase opposite engine RPM to approximately 75% HP RPM. This will provide a bleed air manifold pressure of approximately 30 psi.

(c) Select ISOLATION valve to OPEN.

(d) Select ENG START switch to ON for engine to be started.

(e) Select BLEED AIR switch to ON for operating engine. Continue with normal engine start. Using power lever, maintain 25-30 psi bleed air manifold pressure throughout engine start-cycle.

(f) Upon attaining 40% HP RPM, select both BLEED AIR switches to OFF. Remove pressure from manifold. Notify outside crewmember to position valve to CLOSED.

(g) Select ENG START switch to OFF.

(10) Remove tools, check for presence of foreign objects then close engine cowl start-valve access panel.

(11) Close and secure start-valve access door.

END

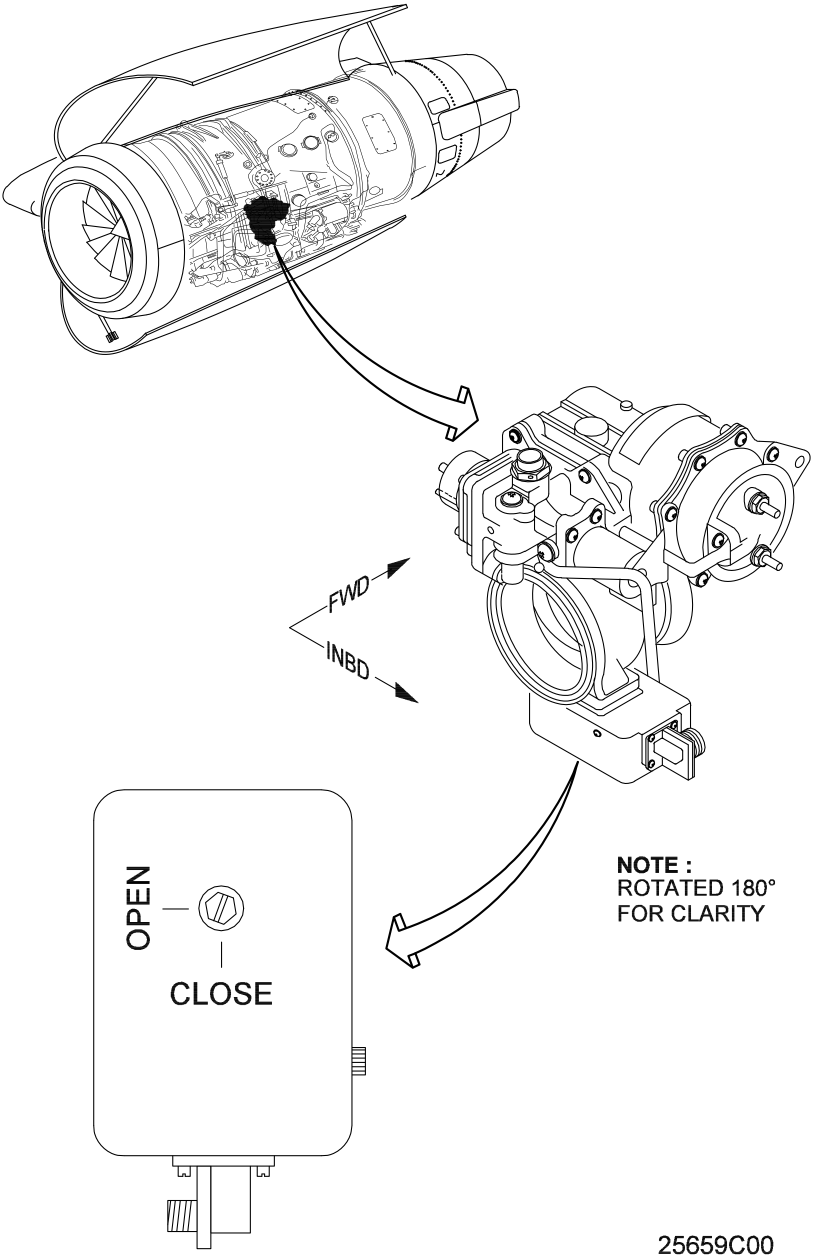


Figure 1: Rolls Royce Tay Engine Start Valve

Operational Procedures With Cowl Anti-Ice Valve Locked Open

OM 09-03-50

THIS PROCEDURE IS TO BE USED IN ACCORDANCE WITH GIV MMEL "M" AND "O" PROCEDURES.

1. **Procedure:**

   A. **General:**

   If a cowl anti-ice valve fails to operate during preflight checkout and icing conditions are expected during flight, the airplane may be dispatched with that cowl anti-ice valve manually locked open.

   NOTE: Use of this procedure is intended for extreme circumstances, where dispatch of the airplane is essential. It is not intended for routine operation.

   B. **References:**

   - **GIV Master Minimum Equipment List, System 30**
   - **GIV Airplane Flight Manual, Limitations, Section 01-30-30: Cowl Anti-Icing**
   - **GIV Aircraft Maintenance Manual, Chapter 30**

   C. **Procedure:**

   (1) Start engine having **operative** cowl anti-ice valve using either APU BLEED AIR or an external air source.

   (2) After engine is started, select APU BLEED AIR (or external air source) OFF. Also select ENG BLEED AIR of that running engine to OFF. **DO NOT RESELECT APU BLEED AIR ON FOR REMAINDER OF OPERATIONS. APU BLEED AIR MUST NOT BE SELECTED ON WITH COWL ANTI-ICE VALVE IN OPEN POSITION.**

   (3) Manually lock the **inoperative** cowl anti-ice valve OPEN. Refer to GIV Aircraft Maintenance Manual, Chapter 30.

   (4) Select ENG BLEED AIR of running engine to ON. Ensure the ISOLATION valve is OPEN by either selecting the START MASTER switch to ON or the ISOLATION valve switch to OPEN.

   (5) Ensure area behind airplane is clear.

Continued on next page →

Operational Procedures With Cowl Anti-Ice Valve Locked Open, ctd… OM 09-03-50

(6) Increase running engine RPM to approximately 80% HP RPM. This will provide a bleed air manifold pressure of approximately 30 psi.

NOTE: Time with bleed air manifold pressure at 30 psi before starting the remaining engine should be kept to a minimum.

(7) Start engine having **inoperative** cowl anti-ice valve using normal procedures.

(8) After engine start is complete, retard power lever to idle, close ISOLATION valve and complete the **After Starting Engines** checklist (page ND-1).

(9) The autothrottle will operate normally. With the cowl anti-ice valve locked OPEN and pressurized, the respective COWL ANTI ICE switch must be selected ON to ensure the autothrottle computes proper EPR settings.

(10) For takeoff operations using autothrottle, Takeoff Initialization (TAKEOFF INIT) must be properly addressed. COWL ANTI-ICE must be initialized as “ON” for TAKEOFF INIT and both COWL ANTI ICE switches must be selected ON whenever the cowl anti-ice valve is locked OPEN for takeoff. This also applies to Landing Initialization (LANDING INIT).

(11) With the cowl anti-ice valve locked OPEN and pressurized, expect COWL ANTI ICE pressure to be approximately 5 psi less than the BLEED AIR pressure supplying the valve.

(12) With the cowl anti-ice valve locked OPEN and pressurized, expect a nominal 5% decrease in range for long range flights.

(13) Record the event and ambient temperature at both the departure and arrival airports in the Airplane Log Book.

(14) After landing and shutdown, manually disengage lock and return cowl anti-ice valve to the CLOSED position.

END

APU Inflight Operation

AFM 2-08-120

NOTE: Maximum altitude for guaranteed APU start is 15,000 ft. The APU may start between 15,000 ft and 20,000 ft. Slow to a maximum airspeed of 250 KCAS.

1. Left / Right Batteries .... ON
2. APU Fire Test .... PERFORM
3. APU Master .... ON
4. APU Oil Pressure light .... ILLUMINATED

   NOTE: For airplanes having ASC 465, the APU Electronic Control Unit (ECU) performs a 12 second Built-In-Test (BIT) after the APU Low Oil Pressure light illuminates. Expect a delay in starter activation if the APU Start switch is activated during the APU ECU BIT.

5. APU Start .... PRESS (MOMENTARILY)

   CAUTION: APU STARTER IS LIMITED TO THREE (3) CONSECUTIVE START ATTEMPTS OF THIRTY (30) SECONDS EACH FOLLOWED BY A TWENTY (20) MINUTE COOL DOWN. THREE (3) ADDITIONAL START ATTEMPTS MAY BE MADE, AFTER WHICH A ONE (1) HOUR COOL DOWN PERIOD MUST BE OBSERVED BEFORE THE NEXT FULL STARTER CYCLE IS ATTEMPTED.

When APU reaches operating speed (100 % RPM).

6. Electrical Master Auxiliary Power .... ON
7. Electrical Load .... AS REQUIRED

Inflight shutdown:

1. Electrical Master Auxiliary Power .... OFF
2. APU STOP .... DEPRESS
3. APU MASTER .... OFF (RPM LESS THAN 5%)

END

P-RNAV (Precision RNAV) Procedures AFM 2-08-140

NOTE: These procedures are based on a dual FMS / RNAV capability with the standard worldwide database installed in the airplane. If dispatching with a single FMS / RNAV capability, verify that the P-RNAV procedure allows the procedure to be flown with a single system.

Preflight:

1. Verify database is current and is applicable to the region.
2. Verify RAIM availability for the procedure to be flown.
3. Confirm correct Initial Position has been entered in all FMSs.
4. Check and verify active flight plan (CDU and Map Display) to the available charts, SID, or other applicable documents.
5. The addition of pilot entered waypoints to the P-RNAV procedure is prohibited. The procedure may only be altered by radar vectors or “Direct-To” clearances.

Departure:

1. Prior to takeoff, verify FMS RNAV is available and operating correctly.
2. Prior to takeoff, update FMS Runway Position. If departing from an intersection, perform a manual Position Update to the current GPS position. If GPS is unavailable, depart using conventional navigation until DME / DME updating is attained and FMS position is updated. A transition to P-RNAV is then permitted.
3. After takeoff and where feasible, monitor flight progress with reference to conventional NAVAIDs using the PFD and Map Display in conjunction with the CDU.

Arrival:

1. Prior to arrival, verify that the correct terminal procedure has been loaded.
2. Check and verity active flight plan (CDU and Map Display) to the available charts, SID, or other applicable documents.
3. The addition of pilot entered waypoints to the P-RNAV procedure is prohibited. The procedure may only be altered by radar vectors or “Direct-To” clearances.

Continued on next page →

4. During the procedure, monitor flight progress with reference to conventional NAVAIDs using the PFD and Map Display in conjunction with the CDU.

Contingencies:

In the event failure of the RNAV system components including the autopilot and / or flight director, multiple system failures, navigation sensors failure, or extended coasting on the IRS position, the flight crew shall notify ATC of degraded navigation capability.

In the event of lost communications, continue with the P-RNAV procedure in accordance with the published lost communication procedure.

In the event of the complete loss of P-RNAV capability, notify ATC and continue navigation using either the IRS navigation mode of the FMS or conventional VOR / DME NAVAIDs.

END

Notes

Engine Fuel Grades

AFM 1-12-30

Fuel conforming to any of the following specifications is approved for use. Fuels conforming to ASTM Specification ES2-74 are also eligible. Mixing of fuels is permissible.

KEROSENE TYPE		
AMERICAN ASTM D1655-89, Jet A ASTM D1655-89, Jet A-1 MIL-T-83133A, Grade (JP-8)	**BRITISH** DEF STAN 91-87 DEF STAN 91-91	**CANADIAN** CAN/CGSB-3.23-M86
FRENCH AIR 3405/C	**USSR** T-1, TS-1, RT (GOST 10277-86) T-7 (GOST 12308-66)	**I.A.T.A.** 1988 Kerosene Type
WIDE CUT JP-4 TYPE		
AMERICAN ASTM D1655-89, Jet B MIL-T-5624N, Grade JP-4	**BRITISH** DEF STAN 91-88	**CANADIAN** CAN/CGSB-3.22-M86
FRENCH AIR 3407/B		**I.A.T.A.** 1987 JP-4
HIGH FLASH POINT JP-5 TYPE		
AMERICAN MIL-T-5624N, Grade JP-5	**BRITISH** DEF STAN 91-86	**CANADIAN** CAN 3-GP-24Ma
FRENCH AIR 3404/C		

NOTE: The use of Wide Cut fuel as agreed to by the Operator, Rolls-Royce, and the appropriate Airworthiness Authority may result in a reduction in HP Fuel Pump Life.

Hydraulic Fluids

AFM 1-12-10

The following fire resistant Type IV hydraulic fluids are approved for use:

- HyJet IV
- HyJet IV-A
- Skydrol LD-4
- Skydrol 500B-4

Fuel Additives

AFM 1-12-40

The following fuel additives (in addition to those included in DEF STAN Specifications) are approved by Rolls-Royce, subject to limitations stated:

1. Corrosion Inhibitor/Lubricity Aids:

Fuel Additive	Concentration Range: lb/42,035 US Gallons lb/35,000 IMP Gallons	
	Minimum	Maximum
APOLLO PRI 19	3 (9 mg/liter)	8 (23 mg/liter)
DUPONT DCI-4A	3 (9 mg/liter)	8 (23 mg/liter)
HITEC 580	3 (9 mg/liter)	8 (23 mg/liter)
HITEC 515	4 (11 mg/liter)	7.5 (21 mg/liter)
TOLAD 245	7.5 (21 mg/liter)	12 (34 mg/liter)

NOTE: Minimum requirement is to ensure that sufficient additive is available when it is required to act as a lubricity aid.

2. Anti-Icing Additive:

   DEF STAN 68-252, MIL-I-27686E, or MIL-I-85470 or any direct equivalent in concentrations not exceeding 0.15 percent by volume.

3. Static Dissipater Additive:

   A. Shell A.S.A. 3 in concentrations of not more than 1.00 part per million.

   B. Stadis 450 maximum concentration not more than 3.00 parts per million.

4. Anti-Microbiological Additive:

   A. Methyl Cellosolve may be used. Refer to **GIV Maintenance Manual, Chapter 28** for additive application procedures.

   B. Biobor JF may be used. Refer to **GIV Maintenance Manual, Chapter 28** for additive application procedures.

   C. Kathon FP 1.5 may be used. Refer to **GIV Maintenance Manual, Chapter 28** for additive application procedures.

   NOTE: Under certain conditions solid matter may be precipitated from fuel containing Biobor JF or Kathon FP 1.5 during flight. The fuel differential pressure signals should be carefully monitored in flight immediately following its use in the airplane tanks. See Rolls Royce Tay Maintenance Manual M-TAY-1RR for recommended procedures to be followed when using Biobor JF or Kathon FP 1.5.

Oil Grades: Engine / Starter / APU

AFM 1-12-50

WARNING: **LUBRICATING OIL IS TOXIC TO SKIN, EYES, AND RESPIRATORY TRACT. SKIN AND EYE PROTECTION IS REQUIRED. AVOID REPEATED OR PROLONGED CONTACT. USE IN A WELL VENTILATED AREA.**

CAUTION: USE ONLY BRAND NAMES SPECIFICALLY AUTHORIZED. USE OF ANY UNAPPROVED OIL REQUIRES AUTHORIZATION OF EQUIPMENT MANUFACTURER.

NOTE: Mixing of oils is not recommended but brands may be mixed if operationally essential. Complete drainage of one oil and replacement with a different brand is not considered mixing of oils.

Oil of the brands below, when reclaimed to approved Rolls-Royce standards for appropriate viscosity grade, are approved for use in the TAY engine.

The following oils are approved for common usage in the engine and APU:

3 Centistoke Oils	5 Centistoke Oils
Aeroshell Turbine Oil 390	Royco/Aeroshell Turbine Oil 500
Castrol 3C Gas Turbine Oil	Aeroshell Turbine Oil 560
Castrol 325 Gas Turbine Oil	Castrol 5000 Gas Turbine Oil
Esso / Exxon Turbo Oil 2389	Esso / Exxon Turbo Oil 2380
	Mobil Jet II
	Mobil 254

Refer to the following manuals for oils approved for specific usage in the engine, starter or APU:

- ENGINE: U.K. CAA Approved Rolls-Royce Tay Operating Instructions (F-TAY-1RR) and associated Service Bulletins
- STARTER: Garrett Starter Maintenance Manual 80-10-53
- APU: Garrett Maintenance Manual No. 49-21-89 for APU Model No. GTCP36-100(G)

Conversion Tables

For Length Conversions:		
Multiply:	**By:**	**To Obtain:**
Feet	0.3048	Meters
Meters	3.281	Feet
Statute Miles	5,280	Feet
Statute Miles	0.8684	Nautical Miles
Statute Miles	1.609	Kilometers
Nautical Miles	6,076.12	Feet
Nautical Miles	1.1516	Statute Miles
Nautical Miles	1.853	Kilometers
Kilometers	3,281	Feet
Kilometers	0.5396	Nautical Miles
Kilometers	0.6214	Statute Miles
Centimeters	0.3937	Inches
Inches	2.54	Centimeters
For Pressure Conversions:		
Multiply:	**By:**	**To Obtain:**
Hectopascals (MB)	0.0295	Inches of Mercury
Inches of Mercury	33.86	Hectopascals (MB)
For Volume Conversions:		
Multiply:	**By:**	**To Obtain:**
U.S. Gallons	0.83267	Imperial Gallons
U.S. Gallons	3.785	Liters
Imperial Gallons	1.20095	U.S. Gallons
Imperial Gallons	4.546	Liters
Liters	0.2642	U.S. Gallons
Liters	0.2200	Imperial Gallons
For Weight Conversions:		
Multiply:	**By:**	**To Obtain:**
Kilograms	2.205	Pounds
Pounds	0.4536	Kilograms
Metric Tons	2205	Pounds
Metric Tons	1000	Kilograms
For Density Conversions:		
Multiply:	**By:**	**To Obtain:**
Kilograms / Liter	5.346	Pounds / Gallon
Pounds / Gallon	0.1198	Kilograms / Liter

Conversion Tables, ctd…

For Speed Conversions:		
Multiply:	**By:**	**To Obtain:**
Knots	1.151	Statute Miles / Hour
Knots	1.8532	Kilometers / Hour
Knots	0.5147	Meters / Second
Statute Miles / Hour	0.8684	Knots
Statute Miles / Hour	1.6093	Kilometers / Hour
Statute Miles / Hour	26.82	Meters / Second
Kilometers / Hour	0.5396	Knots
Kilometers / Hour	0.6214	Statute Miles / Hour
Kilometers / Hour	0.2778	Meters / Second
Meters / Second	1.943	Knots
Meters / Second	2.237	Statute Miles / Hour
Meters / Second	3.600	Kilometers / Hour

Volume and Weight Equivalents			
Liquid	**Lb / U.S. Gal.**	**Kg / U.S. Gal.**	**Kg / Liter**
JP4	6.550	2.9711	0.7847
JP5	6.820	3.0935	0.8170
Kerosene	6.840	3.1026	0.8194
Oil	7.400	3.3566	0.8865
Synthetic Oil	7.740	3.5109	0.9273
Water	8.345	3.7853	1.0000

Converting Hectopascals (Millibars) To Inches of Mercury										
Hpa (MB)	**+0**	**+1**	**+2**	**+3**	**+4**	**+5**	**+6**	**+7**	**+8**	**+9**
	Inches of Mercury (In Hg)									
930	27.46	27.49	27.52	27.55	27.58	27.61	27.64	27.67	27.70	27.73
940	27.76	27.78	27.81	27.84	27.87	27.90	27.93	27.96	27.99	28.02
950	28.05	28.08	28.11	28.14	28.17	28.20	28.23	28.26	28.29	28.32
960	28.35	28.38	28.40	28.43	28.46	28.49	28.52	28.55	28.58	28.61
970	28.64	28.67	28.70	28.73	28.76	28.79	28.82	28.85	28.88	28.91
980	28.94	28.97	29.00	29.03	29.05	29.08	29.11	29.14	29.17	29.20
990	29.23	29.26	29.29	29.32	29.35	29.38	29.41	29.44	29.47	29.50
1000	29.53	29.56	29.59	29.62	29.65	29.67	29.70	29.73	29.76	29.79
1010	29.82	29.85	29.88	29.91	29.94	29.97	30.00	30.03	30.06	30.09
1020	30.12	30.15	30.18	30.21	30.24	30.27	30.29	30.32	30.35	30.38
1030	30.41	30.44	30.47	30.50	30.53	30.56	30.59	30.62	30.65	30.68
1040	30.71	30.74	30.77	30.80	30.83	30.86	30.89	30.91	30.94	30.97
1050	31.00	31.03	31.06	31.09	31.12	31.15	31.18	31.21	31.24	31.27

Conversion Tables, ctd…

Converting Kilometers to Statute Miles or Nautical Miles										
KM	1	2	3	4	5	6	7	8	9	10
SM	0.62	1.24	1.86	2.49	3.11	3.73	4.35	4.97	5.59	6.21
NM	0.53	1.08	1.62	2.16	2.70	3.24	3.78	4.32	4.85	5.40

Converting Millimeters To Inches										
MM	**+0**	**+1**	**+2**	**+3**	**+4**	**+5**	**+6**	**+7**	**+8**	**+9**
	Inches									
700	27.56	27.60	27.64	27.68	27.72	27.76	27.80	27.83	27.87	27.91
710	27.95	27.99	28.03	28.07	28.11	28.15	28.19	28.23	28.27	28.31
720	28.35	28.39	28.43	28.46	28.50	28.54	28.58	28.62	28.66	28.70
730	28.74	28.78	28.82	28.86	28.90	28.94	28.98	29.02	29.06	29.09
740	29.13	29.17	29.21	29.25	29.29	29.33	29.37	29.41	29.45	29.49
750	29.53	29.57	29.61	29.65	29.68	29.72	29.76	29.80	29.84	29.88
760	29.92	29.96	30.00	30.04	30.08	30.12	30.16	30.20	30.24	30.28
770	30.31	30.35	30.39	30.43	30.47	30.51	30.55	30.59	30.63	30.67
780	30.71	30.75	30.79	30.83	30.87	30.91	30.94	30.98	31.02	31.06
790	31.10	31.14	31.18	31.22	31.26	31.30	31.34	31.38	31.42	31.46

Temperature Conversion										
°F	-50	-45	-40	-35	-30	-25	-20	-15	-10	-5
°C	-45.6	-42.8	-40.0	-37.2	-34.4	-31.7	-28.9	-26.1	-23.3	-20.6
°F	0	5	10	15	20	25	30	35	40	45
°C	-17.8	-15.0	-12.2	-9.4	-6.7	-3.9	-1.1	1.7	4.4	7.2
°F	50	55	60	65	70	75	80	85	90	95
°C	10.0	12.8	15.6	18.3	21.1	23.9	26.7	29.4	32.2	35.0
°F	100	105	110	115	120	**°F = (°C + 17.8) x 1.80**				
°C	37.8	40.6	43.3	46.1	48.9	**°C = (°F - 32) x 0.5556**				

NOTE: For interpolation purposes, 1.8°F = 1°C.

Conversion Tables, ctd…

Reported Visibility / RVR Cross Reference						
Meters	45	46	75	76	90	91
Feet	148	150	246	250	295	300
Meters	150	152	175	182	200	213
Feet	492	500	574	600	656	700
Meters	244	300	305	350	366	402
Feet	800	984	1,000	1,148	1,200	1,320
Miles	----	----	----	----	----	¼
Meters	427	488	500	549	550	600
Feet	1,400	1,600	1,640	1,800	1,804	1,969
Miles	----	----	----	----	----	----
Meters	610	670	720	731	792	805
Feet	2,000	2,200	2,362	2,400	2,600	2,640
Miles	----	----	----	----	----	½
Meters	853	900	914	1,067	1,200	1,207
Feet	2,800	2,953	3,000	3,500	3,937	3,960
Miles	----	----	----	----	----	¾
Meters	1,219	1,372	1,500	1,524	1,609	1,676
Feet	4,000	4,500	4,921	5,000	5,280	5,500
Miles	----	----	----	----	1	----
Meters	1,829	2,012	2,414	2,816	3,219	3,621
Feet	6,000	6,600	7,920	9,240	10,560	11,880
Miles	----	1¼	1½	1¾	2	2¼
Meters	4,023	4,426	4,828	***NOTE:*** These values are equivalent for operational purposes and are applicable to both takeoff and landing minima.		
Feet	13,200	14,520	15,840			
Miles	2½	2¾	3			

Conversion Tables, ctd…

Converting Kilograms to Pounds and Pounds to Kilograms					
In Pounds	**Value**	**In Kilos**	**In Pounds**	**Value**	**In Kilos**
2.2	1	0.45	1323.0	600	272.16
4.4	2	0.91	1543.5	700	317.52
6.6	3	1.36	1764.0	800	362.88
8.8	4	1.81	1984.5	900	408.24
11.0	5	2.27	2205	1000	454
13.2	6	2.72	4410	2000	907
15.4	7	3.18	6615	3000	1361
17.6	8	3.63	8820	4000	1814
19.8	9	4.08	11025	5000	2268
22.1	10	4.54	13230	6000	2722
44.1	20	9.07	15435	7000	3175
66.2	30	13.61	17640	8000	3629
88.2	40	18.14	19845	9000	4082
110.3	50	22.68	22050	10000	4536
132.3	60	27.22	44100	20000	9072
154.4	70	31.75	66150	30000	13608
176.4	80	36.29	88200	40000	18144
198.5	90	40.82	110250	50000	22680
220.5	100	45.36	132300	60000	27216
441.0	200	90.72	154350	70000	31752
661.5	300	136.08	176400	80000	36288
882.0	400	181.44	198450	90000	40824
1102.5	500	226.80	220500	100000	45360

All values on the above table are additive as demonstrated in the following example:

To find the value in kilograms for 71,586 pounds, add the values in the kilos column for:

70,000	(31,752.00)
1,000	(454.00)
500	(226.80)
80	(36.29)
6	(2.72)
71,586	= 32,471.81 kilograms

Conversion Tables, ctd…

Meters	Feet	Meters	Feet	Meters	Feet	Meters	Feet
15,100	**49,500**	7,600	24,900	4,900	16,100	2,200	7,200
14,100	**46,300**	**7,500**	**24,600**	**4,800**	**15,700**	**2,100**	**6,900**
13,100	**43,000**	7,400	24,300	4,700	15,400	2,000	6,600
12,800	42,000	7,300	24,000	4,600	15,100	1,900	6,200
12,500	41,000	**7,200**	**23,600**	**4,500**	**14,800**	**1,800**	**5,900**
12,200	40,000	7,100	23,300	4,400	14,400	1,700	5,600
12,100	**39,700**	7,000	23,000	4,300	14,100	1,600	5,200
11,900	39,000	**6,900**	**22,600**	**4,200**	**13,800**	**1,500**	**4,900**
11,600	**38,100**	6,800	22,300	4,100	13,500	1,400	4,600
11,300	37,100	6,700	22,000	4,000	13,100	1,300	4,300
11,100	**36,400**	**6,600**	**21,700**	**3,900**	**12,800**	**1,200**	**3,900**
10,900	35,800	6,500	21,300	3,800	12,500	1,100	3,600
10,600	**34,800**	6,400	21,000	3,700	12,100	1,000	3,300
10,300	33,800	**6,300**	**20,700**	**3,600**	**11,800**	**900**	**3,000**
10,100	**33,100**	6,200	20,300	3,500	11,500	850	2,800
9,900	32,500	6,100	20,000	3,400	11,200	**800**	**2,600**
9,600	**31,500**	**6,000**	**19,700**	**3,300**	**10,800**	750	2,500
9,300	30,500	5,900	19,400	3,200	10,500	**700**	**2,300**
9,100	**29,900**	5,800	19,000	3,100	10,200	650	2,100
8,900	29,200	**5,700**	**18,700**	**3,000**	**9,800**	**600**	**2,000**
8,600	**28,200**	5,600	18,400	2,900	9,500	550	1,800
8,300	27,200	5,500	18,000	2,800	9,200	**500**	**1,600**
8,100	**26,600**	**5,400**	**17,700**	**2,700**	**8,900**	450	1,500
8,000	26,200	5,300	17,400	2,600	8,500	**400**	**1,300**
7,900	25,900	5,200	17,100	2,500	8,200	350	1,100
7,800	**25,600**	**5,100**	**16,700**	**2,400**	**7,900**	**300**	**1,000**
7,700	25,300	5,000	16,400	2,300	7,500		

CAUTION: DO NOT USE FOR APPROACH MINIMA, AS CHART VALUES ARE ROUNDED TO NEAREST 100 FEET.

Note: Because of rounding differences, most metric flight levels can be satisfied by two equivalent feet values. Of the two, the closest value in feet is used in this table. Example: 43,000 or 42,900 feet on the altitude pre-selector window will be shown as 13,100 meters on the PFD.

Note: This chart is not applicable in the People's Republic of China (PRC). For the PRC, see **Figure 2: China RVSM Flight Level Allocation Scheme (FLAS) Table**.

Conversion Tables, ctd…

Table of U.S. Standard Atmospheres									
ALT	° F	°C	IN HG	MB	ALT	° F	°C	IN HG	MB
43,000	-69.7	-56.5	4.82	163	20,000	-12.2	-24.6	13.76	466
42,000	-69.7	-56.5	5.05	171	19,000	-8.7	-22.6	14.35	486
41,000	-69.7	-56.5	5.30	179	18,000	-5.1	-20.6	14.95	506
40,000	-69.7	-56.5	5.56	188	17,000	-1.6	-18.7	15.58	528
39,000	-69.7	-56.5	5.83	197	16,000	2.0	-16.7	16.22	549
38,000	-69.7	-56.5	6.12	207	15,000	5.5	-14.7	16.89	572
37,000	-69.7	-56.5	6.42	217	14,000	9.1	-12.7	17.58	595
36,000	-69.2	-56.2	6.73	228	13,000	12.7	-10.7	18.30	620
35,000	-65.6	-54.2	7.06	239	12,000	16.2	-8.8	19.03	644
34,000	-62.1	-52.3	7.40	251	11,000	19.8	-6.8	19.80	670
33,000	-58.5	-50.3	7.76	263	10,000	23.3	-4.8	20.58	697
32,000	-54.9	-48.3	8.12	275	9,000	26.9	-2.8	21.39	724
31,000	-51.4	-46.3	8.51	288	8,000	30.5	-0.8	22.23	753
30,000	-47.8	-44.3	8.90	301	7,000	34.0	1.1	23.09	782
29,000	-44.3	-42.4	9.31	315	6,000	37.6	3.1	23.98	812
28,000	-40.7	-40.4	9.74	330	5,000	41.2	5.1	24.90	843
27,000	-37.2	-38.4	10.18	345	4,000	44.7	7.1	25.84	875
26,000	-33.6	-36.4	10.64	360	3,000	48.3	9.0	26.82	908
25,000	-30.1	-34.5	11.12	377	2,000	51.9	11.0	27.82	942
24,000	-26.5	-32.5	11.61	393	1,000	55.4	13.0	28.86	977
23,000	-22.9	-30.5	12.12	410	SL	59.0	15.0	29.92	1,013
22,000	-19.4	-28.6	12.65	428	-1,000	62.6	17.0	31.02	1,050
21,000	-15.8	-26.6	13.20	447	-2,000	66.1	18.9	32.15	1,089

NOTE: Values represent Standard Day conditions.

Quick Conversion for JET A Aviation Turbine Fuel							
Pounds	Liters	Imp. Gal.	U.S. Gal	Pounds	Liters	Imp. Gal.	U.S. Gal
50	28	6	7	4,500	2,557	563	676
100	57	13	16	5,000	2,841	625	751
200	114	25	30	6,000	3,410	750	901
300	170	38	46	7,000	3,978	875	1,051
400	227	50	60	8,000	4,546	1,000	1,201
500	284	63	76	9,000	5,114	1,125	1,351
1,000	568	125	150	10,000	5,683	1,250	1,501
1,500	852	188	226	12,000	6,819	1,500	1,801
2,000	1,137	250	300	14,000	7,956	1,750	2,102
2,500	1,421	313	376	16,000	9,092	2,000	2,402
3,000	1,705	375	450	18,000	10,229	2,250	2,702
3,500	1,989	438	526	20,000	11,365	2,500	3,002
4,000	2,273	500	600				

China RVSM Flight Level Allocation Scheme (FLAS) Table

Cleared Meter FL	Select FL in Feet
15500	50900
14900	48900
14300	46900
13700	44900
13100	43000
12500	41100
12200	40100
11900	39100
11600	38100
11300	37100
11000	36100
10700	35100
10400	34100
10100	33100
9800	32100
9500	31100
9200	30100
8900	29100
8400	27600
8100	26600
7800	25600
7500	24600
7200	23600
6900	22600
6600	21700
6300	20700
6000	19700
5700	18700
5400	17700
5100	16700
4800	15700
4500	14800
4200	13800
3900	12800
3600	11800
3300	10800
3000	9800
2700	8900
2400	7900
2100	6900
1800	5900
1500	4900
1200	3900
900	3000
600	2000
500	1600
400	1300
300	1000
200	700
100	300

WESTBOUND (180° - 359°)

RVSM airspace

40,100
38,100
36,100
34,100
32,100
30,100

180° to 359°

EASTBOUND (000° - 179°)

RVSM airspace

41,100
39,100
37,100
35,100
33,100
31,100
29,100

0° to 179°

IMPORTANT NOTES

- ATC will issue the Flight Level clearance in meters
- Pilots shall use the China RVSM FLAS table to determine the correspon-ding flight level in feet.

CAUTION:
DO NOT USE FOR APPROACH MINIMA, AS CHART VALUES ARE ROUNDED TO NEAREST 100 FEET.

- The aircraft shall be flown using the flight level in FEET.
- Pilots should be aware that due to the rounding differences, the metric readout of the onboard avionics will not necessarily correspond to the cleared Flight Level in meters however the difference will never be more than 30 meters.

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Figure 2

Noise Standards

OM APPENDIX D

The Effective Perceived Noise Levels (EPNL) comply with the requirement of 14 CFR, Part 36, which are essentially the same as the requirements of ICAO Annex 16, Volume 1, Chapter 3. Noise levels established in compliance with 14 CFR, Part 36 are:

		Noise Levels (EPNdB)	Noise Limits 14 CFR Part 36 ICAO Annex 16 (EPNdB)
Flyover	(Flaps 20)	79.0	89
Lateral	(Flaps 20)	87.6	94
Approach	(Flaps 39)	93.3	98

No determination has been made by the Federal Aviation Administration that the noise levels of this airplane are or should be acceptable or unacceptable for operation at, into, or out of any airport.

END

Battery Integrity Check

OM 2A-24-00

1. BATT 1 / BATT 2 Switches .... DEPRESSED (ON)
2. EPMP .... OBSERVE
   A. BATT 1 / BATT 2 Switchlights .... ILLUMINATED
   B. ESS DC BUS BATT Switchlight .... ILLUMINATED
   C. ESS AC BUS E INV Switchlight .... ILLUMINATED
   D. ESS Voltmeter Switchlight .... DEPRESSED (ON)
   E. AC VOLTS / FREQ / DC VOLTS Readings .... 115 / 400 / 22-27
   F. CHGR FAIL Lights .... ILLUMINATED
   G. BATTERY 1 / 2 Ammeters .... DISCHARGING
   H. BATTERY 1 / 2 Voltmeters .... INDICATING VOLTAGE
3. BATT 1 Switch .... EXTENDED (OFF)
4. EPMP .... OBSERVE
   A. BATT 1 Switchlight .... EXTINGUISHED
   B. BATTERY 1 Ammeter 000
   C. BATTERY 2 Ammeter .... DISCHARGING
   D. BATTERY 2 Voltmeter .... 22V DC MINIMUM
5. BATT 1 Switch .... DEPRESSED (ON)
6. BATT 2 Switch .... EXTENDED (OFF)
7. EPMP .... OBSERVE
   A. BATT 2 Switchlight .... EXTINGUISHED
   B. BATTERY 2 Ammeter 000
   C. BATTERY 1 Ammeter .... DISCHARGING
   D. BATTERY 1 Voltmeter .... 22 VDC MINIMUM
8. BATT 2 Switch .... DEPRESSED (ON)
9. EPMP .... OBSERVE
   A. BATT 1 / BATT 2 Switchlights .... ILLUMINATED
   B. BATTERY 1 / 2 Ammeters .... DISCHARGING
   C. BATTERY 1 / 2 Voltmeters .... INDICATING VOLTAGE

END

Pressurization System Check

OM 2A-21-20

Test Conditions:

1. Main Entrance Door .... OPEN
2. L ENG / R ENG / APU BLEED AIR........................ AS REQUIRED
3. FLIGHT / LANDING Switch .... LANDING (GREEN)
4. AUTO / MANUAL Switch .... AUTO (GREEN)
5. ADC #1 / ADC #2 Switch.................................... ADC #1 (GREEN)
6. Outflow Valve Position Indicator .... OPEN

Procedure:

1. FLIGHT / LANDING Switch .... FLIGHT (GREEN)
2. Outflow Valve Position Indicator ..... DRIVING TOWARD CLOSED

When outflow valve position indicator reaches halfway closed:

3. ADC #1 / ADC #2 Switch.................................... ADC #2 (AMBER)
4. Outflow Valve Position Indicator ....DRIVES FULLY CLOSED
5. FLIGHT / LANDING Switch .... LANDING (GREEN)
6. Outflow Valve Position Indicator ....DRIVING TOWARD OPEN

When outflow valve position indicator reaches halfway closed:

7. ADC #1 / ADC #2 Switch.................................... ADC #1 (GREEN)
8. Outflow Valve Position Indicator ....DRIVING FURTHER OPEN

Before outflow valve position indicator reaches fully open:

9. AUTO / MANUAL Switch .... MANUAL (AMBER)

   NOTE: The motor power light (round amber light) will also illuminate.

10. Outflow Valve .... POSITION USING MAN HOLD KNOB
11. AUTO / MANUAL Switch .... AUTO (GREEN)
12. Outflow Valve .... VERIFY FULLY OPEN

Final Configuration:

1. FLIGHT / LANDING Switch .... LANDING (GREEN)
2. AUTO / MANUAL Switch .... AUTO (GREEN)
3. ADC #1 / ADC #2 Switch.................................... ADC #1 (GREEN)
4. Outflow Valve Position Indicator .... OPEN
5. Motor Power Light (Round Amber Light) .... EXTINGUISHED

END

Fuel System Check

OM 2A-28-30

Test Conditions:

1. L / R Remote Fueling Shutoff Switches..........OPEN (EXTENDED)
2. Crossflow Valve .... CLOSED
3. L MAIN Boost Pump ....ON
4. Intertank Valve.. CLOSED
5. **L FUEL PRESS LOW** CAS Message .... NOT DISPLAYED
6. **R FUEL PRESS LOW** CAS Message..........................DISPLAYED

Procedure:

1. L / R Remote Fueling Shutoff Switches...CLOSED (DEPRESSED)
   NOTE: Verify CLSD legend illuminates in switches.
2. L / R Remote Fueling Shutoff Switches..........OPEN (EXTENDED)
3. Crossflow / Intertank Valves ....OPEN SIMULTANEOUSLY
4. Indications...OBSERVE
   A. Crossflow Valve Switchlight Bar .... ILLUMINATED
   B. Intertank Valve Switchlight Bar........................... ILLUMINATED
   C. **FUEL XFLOW OPEN** CAS Message......................DISPLAYED
   D. **FUEL INT TNK OPEN** CAS Message....................DISPLAYED
5. R FUEL PRESS LOW CAS Message .... NOT DISPLAYED
6. L MAIN Boost Pump ....OFF
   A. L ALT Boost Pump...ON
   B. **L-R FUEL PRESS LOW** CAS Messages..................................
   ....DISPLAYED MOMENTARILY, THEN NOT DISPLAYED
7. L ALT Boost Pump ....OFF
   A. R MAIN Boost Pump ....ON
   B. **L-R FUEL PRESS LOW** CAS Messages..................................
   ....DISPLAYED MOMENTARILY, THEN NOT DISPLAYED
8. R MAIN Boost Pump ....OFF
   A. R ALT Boost Pump...ON
   B. **L-R FUEL PRESS LOW** CAS Messages..................................
   ....DISPLAYED MOMENTARILY, THEN NOT DISPLAYED
9. Crossflow / Intertank Valves ....CLOSE SIMULTANEOUSLY

10. Indications .... OBSERVE
    A. Crossflow Valve Switchlight Bar...................... EXTINGUISHED
    B. Intertank Valve Switchlight Bar........................ EXTINGUISHED
    C. FUEL XFLOW OPEN CAS Message.............NOT DISPLAYED
    D. FUEL INT TNK OPEN CAS Message ....NOT DISPLAYED

    NOTE: Steps A through D will occur simultaneously.
11. L FUEL PRESS LOW CAS Message .... DISPLAYED
12. L MAIN Boost Pump... ON
13. L FUEL PRESS LOW CAS Message .... NOT DISPLAYED
14. R ALT Boost Pump.. OFF
15. R FUEL PRESS LOW CAS Message......................... DISPLAYED

END

Oxygen Crew Mask / Regulator Preflight Test OM 2A-35-20

NOTE: This procedure allows the flight crew the ability to perform a complete preflight check without having to remove the mask/regulator from its stowage compartment.

1. Select the crew oxygen system toggle valve switch to ON.
2. Check the crew oxygen system supply pressure.
3. On the crew mask/regulator stowage compartment, perform the following based upon the type of crew mask/regulator installed:
    A. For the EROS MXP 100, depress the RESET TEST control lever on the LH door in the direction of the arrow. Oxygen is then supplied to the mask/regulator assembly.
    B. For the EROS MXP 300, depress the PRESS TO TEST AND RESET control lever on the LH door in the direction of the arrow. Oxygen is then supplied to the mask/regulator assembly.
4. MXP 100 only: observe that a white band is visible at the top of the RESET TEST control lever (LH door).
5. Observe that the flow indicator (blinker) momentarily displays a yellow cross (+), then returns to black. This indicates the regulator is leak-tight. If the blinker continuously displays the yellow cross, a leak in the system should be assumed and investigated.

6. While holding the MXP 100 RESET TEST control lever (or MXP 300 PRESS TO TEST AND RESET control lever), depress and hold the red PRESS TO TEST button on the mask regulator for one (1) second while performing steps A and B below.

   A. Observe that the blinker momentarily displays a yellow cross, then returns to black. This indicates the regulator demand mechanism is working properly.

   B. While holding the MXP 100 RESET TEST control lever (or MXP 300 PRESS TO TEST AND RESET control lever) and red PRESS TO TEST button, microphone integrity must be checked by listening for oxygen flow noise through the communication set.

7. Release the PRESS TO TEST button on the mask regulator.

8. Release the MXP 100 RESET TEST control lever (or MXP 300 PRESS TO TEST AND RESET control lever):

   A. MXP 100 Only: observe the white band (top of RESET TEST control lever, LH door) disappears.

   B. Observe that oxygen flow ceases. Downstream pressure will be vented to ambient.

9. Select the crew oxygen system toggle valve switch to OFF, if desired.

   NOTE: The MXP 100 RESET TEST control lever (or MXP 300 PRESS TO TEST AND RESET control lever) may also be used for shutting off the supply to the mask/regulator assembly in the event of a failure. Prior to depressing the MXP 100 REST TEST control lever (or MXP 300 PRESS TO TEST AND RESET control lever), close the door.

END

Cockpit Voice Recorder (CVR) Test GAC

1. Ensure a COMM radio is tuned to a continuous output frequency, such as ATIS.
2. Plug headset into CVR headset jack.
3. Ensure ATIS is heard through CVR headset jack.
4. Snap fingers or clap hands near the Cockpit Area Microphone (CAM); ensure CAM audio is heard through CVR headset jack. (Some delay will be present.)
5. Push the TEST button; ensure you hear a tone through the CVR headset jack and ensure the meter needle jumps.

END

Display Controller Test GAC

On the first flight of each day, select the TEST page and perform the following tests:

1. Check appropriate pages on the display controller to confirm desired functions have been selected.
2. EFIS (each pilot, respective side) .... TEST

   The EFIS test can be initiated using the on-side display controller, provided airspeed data is valid and less than 60 knots, and the airplane is on the ground. Selecting EFIS TEST results in the following annunciations:

   - **DU 1 / 6 (PFDs):**
     - IRS – indicates failure
     - Air Data (Airspeed / AOA / Altitude / VS) – red X
     - Flight Director – amber FD displayed
     - Comparison Monitor Annunciators – active, not all shown
     - Radio Altitude / Distance Display / Heading – amber dashes
     - Vertical Deviation Display – red X (if frequency tuned and NAV selected for display)
     - AOA – removed
     - Bearing Pointers – removed (except for ADF / LASERTRAK / FMS / NMS)
     - ATT FAIL / HDG FAIL messages – displayed

- **DU 2 / 5 (NDs):**
  - HDG FAIL / VERTICAL ALERT / TRK CHG / OFFSET – displayed
  - HDG / SAT / TAS – amber dashes
  - Current GSPD – displayed

3. EICAS .... TEST

   Performing an EICAS test causes the three-chime aural warning to sound and the master warning and caution acknowledgement switches (MASTER WARN "W" AND "C") to illuminate. The adjacent AP OFF amber annunciator light also illuminates. Selecting EICAS TEST results in the following annunciations:

- **DU 3 (Engine Instruments):**

  Amber dashes will be substituted for digits for the **left engine**:

  - EPR
  - TGT
  - LP RPM
  - HP RPM
  - FF
  - OIL PRESS
  - OIL TEMP
  - LP EVM
  - HP EVM
  - COMB Hydraulics
  - UTIL Hydraulics
  - ENG FUEL TEMP
  - L FUEL QTY
  - Total FUEL QTY

  The following indications will be shown for the **right engine**:

  - EPR – current value
  - TGT – 2047° (red)
  - LP RPM –163.8 (red)
  - HP RPM – 163.8 (red)
  - FUEL TEMP – 409°
  - R FUEL QTY – 0 (amber)
  - OIL PRESS – 0
  - OIL TEMP – 409°

  Actual values will be shown for the following **right engine** indications:

  - LP EVM
  - HP EVM
  - EPR Limits
  - FLIGHT Hydraulics
  - AUX Hydraulics
  - EPR Modes
  - FF
  - EPR Targets

  The following **right engine** icons will be displayed:

  - A/I
  - IGN
  - SVO (flashing amber
  - EPR

- **DU 4 (Crew Alerting System):**

  All red CAS warning messages will be displayed.

4. RAD ALT .... TEST
   Verify “100” is displayed on the ADI portion of the PFD.
5. TONE.. TEST
   Verify tone is activated. Adjust tone volume at this time, if desired. (Level is normally no lower than 80.) Select RETURN after volume has been adjusted to silence tone and end test.

END

Flight Guidance Panel Test GAC

Check the following functions of the flight guidance panel to confirm selections can be made and the indications are displayed in the appropriate window:

1. Altitude............SET IN ALTITUDE WINDOW / VERIFIED ON PFD
2. Heading ....
   ....SET / SELECT RUNWAY HEADING IN HEADING WINDOW
3. Speed ....VERIFY V_2 (OR APPROPRIATE SPEED) IS DISPLAYED IN SPEED WINDOW AND ON PFD
4. AT ARM... ON
5. PFD CMD L

END

Auxiliary Hydraulic Pump / Brake System Check

OM 2A-32-00

General:

The ability to test the brake system is provided in order to:

- Verify automatic operation of the Auxiliary Hydraulic pump (hereafter referred to as AUX pump)
- Verify proper operation of the wheel brake system after engine start but prior to taxi (Brake-By-Wire [BBW] airplanes only)

In order to observe applied brake pressure, these checks should be performed with the HYDRAULICS system page (SPZ-8000 equipped airplanes) or the BRAKES system page (SPZ-8400 equipped airplanes) selected for display on DU 4. All checks involve depressing the brake pedals to three positions:

- *Slight deflection*, where immediate but low applied brake pressures are observed
- *Half deflection* (also known as the "soft stops"), where applied brake pressures of approximately 600-800 psi are observed
- *Full deflection*, where applied brake pressures of approximately 3000 ±300 psi are observed

Perform the following procedure during the "AUX Pump / Brake System Check" step of the Before Starting Engines checklist (page NC-1):

NOTE: When performing this procedure on Hydromechanical Analog Braking System (HMAB) airplanes, the parking brake must be released.

1. AUX PUMP OFF / ARM Switch .... ARM
2. Pilot's Brake Pedals .... DEPRESS
3. Pressure Readings .... OBSERVE
   A. AUX Pump Pressure .... 3000 (±300) PSI
   B. Applied Brake Pressure .... APPROPRIATE TO DEFLECTION
4. Pilot's Brake Pedals .... RELEASE
5. AUX Pump Pressure .... 3000 (±300) PSI
6. AUX PUMP OFF / ARM Switch .... NOT ARM
7. Pressure Readings .... OBSERVE
   A. AUX Pump Pressure .... ZERO
   B. Applied Brake Pressure .... ZERO

8. AUX PUMP OFF / ARM Switch .... ARM
9. Copilot's Brake Pedals .... DEPRESS
10. Pressure Readings .... OBSERVE
    A. AUX Pump Pressure .... 3000 (±300) PSI
    B. Applied Brake Pressure....... APPROPRIATE TO DEFLECTION
11. Copilot's Brake Pedals .... RELEASE
12. AUX Pump Pressure .... 3000 (±300) PSI

For BBW airplanes, perform Steps 13 and 14. For HMAB airplanes, omit Steps 13 and 14 and proceed to Step 15.

NOTE: Airplane speed should be less than 12 knots for this test.

13. BRAKE TEST Switch .... DEPRESS
14. Annunciations .... OBSERVE
    A. Switch Legend (IN TEST)........... ILLUMINATED (3 SECONDS)
    B. CAS Messages........................ DISPLAYED, THEN REMOVED
       - ANTISKID FAIL
       - BRAKE PEDAL
       - BRAKE FAIL
       - BRAKE MAINT REQ'D

For HMAB airplanes, perform Steps 15 and 16:

NOTE: Airplane speed should be less than 12 knots for this test.

NOTE: On HMAB airplanes, the AUX pump must be momentarily de-armed to stop AUX pump operation.

15. ANTI SKID TEST Switch .... DEPRESS AND HOLD
16. Annunciations .... OBSERVE
    A. Switch Legend (IN TEST)........... ILLUMINATED (3 SECONDS)
    B. CAS Messages........................ DISPLAYED, THEN REMOVED
       - ANTISKID FAIL
       - BRAKE MAINT REQ'D
       - BRAKE FAIL

END

Elevator Trim System Check

OM 2A-27-20

Located on the pilot's flight panel, the PITCH TRIM ENG / DISENG switch engages or disengages the electric pitch trim. Pitch trim is also engaged whenever the autopilot is engaged. With electric pitch trim engaged (amber DISEN switch legend extinguished), pitch trim can be adjusted through use of a split-half pitch trim switch installed on the outboard grip of each control wheel.

Inadvertent actuation of pitch trim, including runaway, is minimized through the split-half switch design. In order for the pitch trim to be actuated, both halves of the switch must be simultaneously moved in the same direction.

During the **Before Starting Engines** checklist (page NC-1), on the first flight of the day, run the elevator trim fully up and fully down using both halves of the switch, simultaneously. Next, attempt to run the pitch trim using each half of the switch independently. Any movement resulting from using either half of the switch independently indicates a malfunction that should be corrected before flight. Finally, set pitch trim for the takeoff Center of Gravity (CG) condition as determined using the **Recommended Elevator Trim Tab Settings for Takeoff** table, page NC-5.

END

Ground Spoiler System Check

OM 2A-27-70

The ground spoiler system is monitored by a warning circuit that will detect certain in-flight and on-ground malfunctions within the ground spoiler system, prompting the following annunciations:

- A red GND SPOILER warning message will be displayed on CAS and, if installed, the SWLP, should a failure occur within the ground spoiler system either while airborne or on the ground.
- A red NO GND SPOILERS warning light, located adjacent to the pilot's AOA indexer on the windshield center post, will illuminate if the ground spoilers do not automatically extend upon touchdown.

Additionally, a blue GND SPOILER UNARM advisory message is displayed on CAS anytime the landing gear is down and locked and the GND SPLR OFF / ARMED switch is not selected to ARMED.

The following ground spoiler system check should be performed during the **After Starting Engines** checklist (page ND-1), prior to the first departure of each day. It provides a complete functional check of the automatic ground spoiler system and ground spoiler warning system.

NOTE: When the power lever is advanced, the red GND SPOILER warning message may be displayed momentarily and then extinguish. If the message remains extinguished, continue the test.

NOTE: The absence of either the NO GND SPOILERS light or the GND SPOILER message during Step 8, or any incorrect indication, constitutes an unsuccessful ground spoiler system check.

NOTE: The ground spoilers cannot always be observed from the cockpit. The correct GND SPOILER message and NO GND SPOILERS light indications are sufficient for satisfactory preflight functional verification.

1. GND SPLR OFF / ARMED Switch .... OFF
2. Power Levers (Both)... IDLE
   A. Ground Spoilers ....STOWED
   B. NO GND SPOILERS Light .... EXTINGUISHED
   C. GND SPOILER Message ....NOT DISPLAYED
   D. GND SPOILER UNARM Message .... DISPLAYED

3. GND SPLR OFF / ARMED Switch .... ARMED
   A. Ground Spoilers .... DEPLOYED
   B. NO GND SPOILERS Light .... FLASHES MOMENTARILY, THEN EXTINGUISHED
   C. GND SPOILER Message .... NOT DISPLAYED
   D. GND SPOILER UNARM Message .... NOT DISPLAYED
4. Left Power Lever .... ADVANCE OUT OF IDLE
   A. Ground Spoilers .... STOWED
   B. NO GND SPOILERS Light .... EXTINGUISHED
   C. GND SPOILER Message .... FLASHES MOMENTARILY, THEN NOT DISPLAYED
5. Right Power Lever .... ADVANCE OUT OF IDLE
6. Left Power Lever .... RETURN TO IDLE
   A. Ground Spoilers .... REMAIN STOWED
   B. NO GND SPOILERS Light .... EXTINGUISHED
   C. GND SPOILER Message .... NOT DISPLAYED
7. GND SPLR OFF / ARMED Switch .... OFF
   A. GND SPOILER UNARM Message .... DISPLAYED
8. GND SPLR TEST Switch .... DEPRESS AND HOLD
   A. Ground Spoilers .... REMAIN STOWED
   B. GND SPLR TEST Switch Legend .... ILLUMINATED
   C. NO GND SPOILERS Light .... ILLUMINATED
   D. GND SPOILER Message .... DISPLAYED
   E. GND SPOILER UNARM Message .... DISPLAYED
   F. GND SPOILER Light (SWLP, If Installed) .... ILLUMINATED
   G. MASTER WARN Lights (Glareshield) .... ILLUMINATED

9. GND SPLR TEST Switch .... RELEASE
   - A. Ground Spoilers .... REMAIN STOWED
   - B. GND SPLR TEST Switch Legend .... EXTINGUISHED
   - C. NO GND SPOILERS Light .... EXTINGUISHED
   - D. GND SPOILER UNARM Message .... DISPLAYED
   - E. GND SPOILER Light (SWLP, If Installed) .... EXTINGUISHED
   - F. MASTER WARN Lights (Glareshield) .... EXTINGUISHED

10. Right Power Lever .... IDLE
   - A. NO GND SPOILERS Light .... EXTINGUISHED
   - B. GND SPOILER Message ....NOT DISPLAYED
   - C. GND SPOILER UNARM Message .... DISPLAYED

END

Stall Warning / Stall Barrier System Check OM 2A-27-20

The following stall warning / stall barrier system check should be performed during the **After Starting Engines** checklist (page ND-1), prior to the first departure of each day. If flight time for the day exceeds eight (8) hours, a second stall barrier check is required prior to the second flight of the day. This test is performed only on the ground and cannot be tested in flight.

1. STALL BARRIER Switch .... ON
2. Display Controllers (Both)............................ SELECT TEST MENU
3. Sea Level (S/L) Line Select Keys (Both) .... SIMULTANEOUSLY DEPRESS AND HOLD

   Continue holding both S/L line select keys until the normalized AOA indicator pointer slews. Then verify the following:

   A. Stall Warning (Control Column Shaker) ....OCCURS BETWEEN 0.70 AND 0.80

   B. Stall Barrier (Control Column Pusher)....................................... ....OCCURS BETWEEN 0.95 AND 1.07

   C. A/P DISC (BARR DISC) Button .... OVERRIDES PUSHER WHEN DEPRESSED

4. ALT Line Select Keys (Both) .... SIMULTANEOUSLY DEPRESS AND HOLD

   Continue holding both ALT line select keys until the normalized AOA indicator pointer slews. Then verify the following:

   A. Stall Warning (Control Column Shaker) ....OCCURS BETWEEN 0.54 AND 0.65

   B. Stall Barrier (Control Column Pusher)....................................... ....OCCURS BETWEEN 0.79 AND 0.90

   C. A/P DISC (BARR DISC) Button .... OVERRIDES PUSHER WHEN DEPRESSED

   NOTE: Both pilot's and copilot's sides have to be tested simultaneously in order to activate the control column pusher.

   NOTE: Another momentary push of the TEST function key may be required to ensure the AOA indicator is in the normal area prior to takeoff.

   NOTE: There are two stall warning / stall barrier systems installed in the airplane. Dispatch with one stall warning / stall barrier system inoperative is allowed with reference to the **MEL**.

END

Notes

GIV-SP Performance Planning Index

GIV-SP Takeoff Planning

Continued on next page →

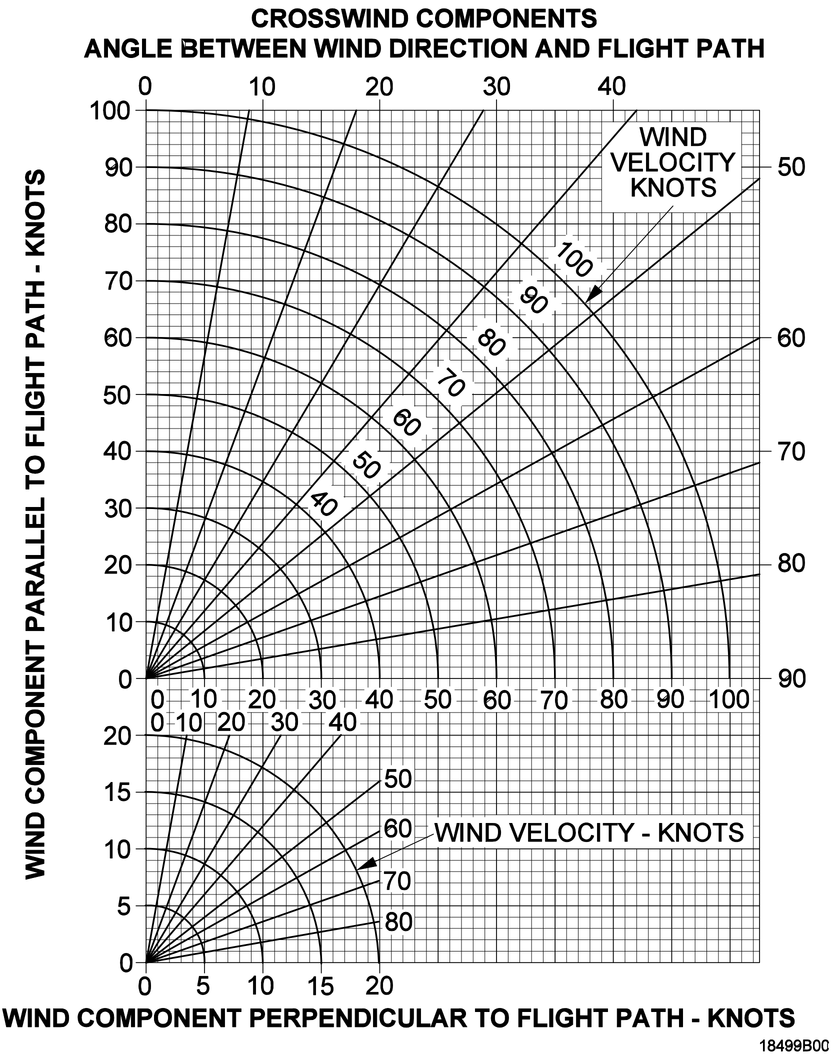
GIV-SP Performance Planning Index, ctd…

GIV-SP Cruise Planning

GIV-SP Cruise Planning, ctd…

GIV-SP Landing Planning

GIV-SP Crosswind Components AFM 5.1

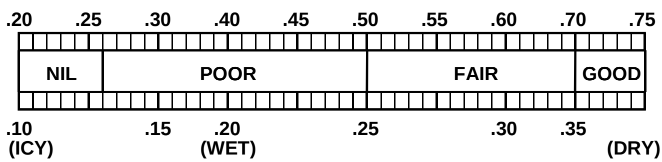


GIV-SP Contaminated Runway Operations GIV-OIS-2A

RUNWAY SURFACE CONTAMINATION (RSC), CRFI EQUIVALENT AND ESTIMATED LANDING BRAKING COEFFICIENT

RSC	CRFI EQUIVALENT	PIREP	RCR	APPROXIMATE BRAKING COEFFICIENT
Bare and Dry	≥ 0.80			
Damp - Less than 0.01 inch of water	0.60 - 0.70	Good	≥ 18	0.36 - 0.39
Very light snow patches	0.55 - 0.60			
Wet concrete - 0.01 to 0.03 inch of water	0.40 - 0.55			
Wet Asphalt - 0.01 to 0.03 inch of water	0.30 - 0.60	Fair	13 - 18	0.25 - 0.35
Compacted snow -- below -15°C	0.40			
Sanded, packed snow or ice	0.40 - 0.50			
Heavy rain -- 0.03 to 0.10 inch of water	0.28 - 0.30			
Snow covered	0.25 - 0.30	Poor	5 - 12	0.13 - 0.25
Compacted snow -- above -15°C	0.20 - 0.25			
Cold ice -- below -10°C	0.10 - 0.20			
Wet ice -- above -10°C	0.05 - 0.10			
Hydroplaning - standing water ≥ 0.10	0.05	Nil	≤ 5	≤ 0.13

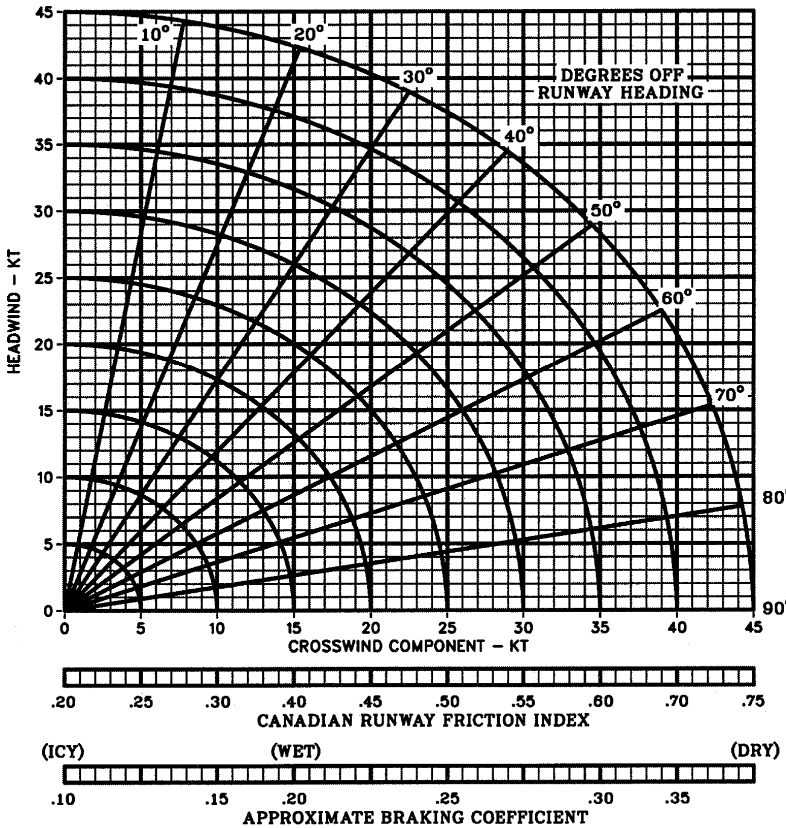
CANADIAN RUNWAY FRICTION INDEX



APPROXIMATE BRAKING COEFFICIENT

NOTE: The data presented above is advisory data only and is not FAA approved. For additional information concerning contaminated runway operations, refer to the latest approved revision of **Operational Information Supplement GIV-OIS-2A, Contaminated Runway Operations**.

CROSSWIND LIMITS BASED ON CANADIAN RUNWAY FRICTION INDEX OR BRAKING COEFFICIENT (FOR HEADWIND CONDITIONS ONLY)



NOTE: The data presented above is advisory data only and is not FAA approved. For additional information concerning contaminated runway operations, refer to the latest approved revision of **Operational Information Supplement GIV-OIS-2A, Contaminated Runway Operations**.

GIV-SP Takeoff Planning Charts: Flaps 20° AFM APP. A

The charts in this section provide quick reference planning data for takeoff planning at the following Airport Pressure Altitudes (APA), for 20° flap configurations:

- Sea Level
- 500 Feet
- 1000 Feet
- 2000 Feet
- 4000 Feet
- 6000 Feet
- 8000 Feet

These charts are for use for airplanes SN 1214 and subsequent and SN 1000 thru 1213 with ASC 190 incorporated.

In the interest of safety, the ***CAUTION*** and ***NOTES*** following each takeoff planning chart must be observed when using any takeoff planning chart in this section.

GIV-SP Takeoff Planning: Flaps 20° - APA Sea Level

AFM APP. A

TAKEOFF PLANNING CHART

GIV-SP **AIRPORT PRESSURE ALTITUDE = SEA LEVEL** **TAKEOFF FLAP 20°**

74,600 LB MTOGW	OAT (°C)	50	45	40	35	30	25	20	15	5	-5	-15
	OAT (°F)	122	113	104	95	86	77	68	59	41	23	5
	RATED EPR	1.59	1.62	1.64	1.67	1.70	1.70	1.70	1.70	1.69	1.69	1.69
-- 74,600 LB --												
V_{FS} = 173 KCAS	FLD LNGTH	7,770	7,100	6,580	6,130	5,750	5,660	5,570	5,480	5,350	5,170	4,990
V_{SE} = 180 KCAS	V_1 KCAS	146	144	142	140	139	139	139	139	140	140	140
V_{REF} = 158 KCAS	V_R KCAS	146	146	146	146	145	145	145	145	145	145	145
MAX TEMP = 50°C	V_2 KCAS	150	150	150	150	150	150	150	150	150	150	150
-- 74,000 LB --												
V_{FS} = 172 KCAS	FLD LNGTH	7,600	6,980	6,470	6,030	5,660	5,570	5,480	5,400	5,270	5,090	4,910
V_{SE} = 179 KCAS	V_1 KCAS	145	143	141	140	138	138	138	139	139	139	139
V_{REF} = 158 KCAS	V_R KCAS	145	145	145	145	144	144	144	144	144	144	144
MAX TEMP = 50°C	V_2 KCAS	149	149	149	149	149	149	149	149	149	149	149
-- 72,000 LB --												
V_{FS} = 170 KCAS	FLD LNGTH	7,130	6,570	6,110	5,700	5,360	5,280	5,190	5,110	4,990	4,820	4,650
V_{SE} = 177 KCAS	V_1 KCAS	142	140	139	137	136	136	136	136	136	136	136
V_{REF} = 156 KCAS	V_R KCAS	143	143	143	143	142	142	142	142	142	142	142
MAX TEMP = 50°C	V_2 KCAS	147	147	147	147	147	147	147	147	147	147	147
-- 70,000 LB --												
V_{FS} = 167 KCAS	FLD LNGTH	6,690	6,190	5,760	5,390	5,070	4,990	4,910	4,840	4,720	4,560	4,400
V_{SE} = 174 KCAS	V_1 KCAS	139	137	136	134	133	133	133	133	134	134	134
V_{REF} = 154 KCAS	V_R KCAS	141	141	141	140	140	140	140	140	140	140	140
MAX TEMP = 50°C	V_2 KCAS	145	145	145	145	145	145	145	145	145	145	145
-- 68,000 LB --												
V_{FS} = 165 KCAS	FLD LNGTH	6,280	5,820	5,430	5,090	4,790	4,710	4,640	4,570	4,460	4,310	4,160
V_{SE} = 171 KCAS	V_1 KCAS	136	134	133	132	130	130	130	130	131	131	131
V_{REF} = 151 KCAS	V_R KCAS	139	139	139	138	137	137	137	137	137	137	137
MAX TEMP = 50°C	V_2 KCAS	143	143	143	143	143	143	143	143	143	143	143
-- 66,000 LB --												
V_{FS} = 162 KCAS	FLD LNGTH	5,890	5,470	5,120	4,800	4,520	4,450	4,380	4,310	4,200	4,060	3,920
V_{SE} = 169 KCAS	V_1 KCAS	133	132	130	129	128	128	128	128	128	128	128
V_{REF} = 149 KCAS	V_R KCAS	137	137	136	135	135	135	135	135	135	135	135
MAX TEMP = 50°C	V_2 KCAS	141	141	141	141	141	141	141	141	141	141	141
-- 64,000 LB --												
V_{FS} = 160 KCAS	FLD LNGTH	5,520	5,140	4,820	4,520	4,260	4,190	4,130	4,060	3,960	3,830	3,700
V_{SE} = 166 KCAS	V_1 KCAS	131	129	128	126	125	125	125	125	125	125	125
V_{REF} = 147 KCAS	V_R KCAS	135	134	134	133	132	132	132	132	132	132	132
MAX TEMP = 50°C	V_2 KCAS	139	139	139	139	139	139	139	139	139	139	139
-- 62,000 LB --												
V_{FS} = 157 KCAS	FLD LNGTH	5,170	4,830	4,530	4,250	4,010	3,950	3,890	3,830	3,730	3,610	3,480
V_{SE} = 164 KCAS	V_1 KCAS	128	126	125	123	122	122	122	122	122	122	123
V_{REF} = 144 KCAS	V_R KCAS	132	132	131	131	130	130	130	130	130	130	130
MAX TEMP = 50°C	V_2 KCAS	137	137	137	137	137	137	137	137	137	137	137

CAUTION: DO NOT REDUCE TAKEOFF EPR BY MORE THAN .15 OR BELOW A MINIMUM VALUE OF 1.56.

NOTES:

HEADWIND:	Increase available field length 2% for each 5 knots (up to 40 knots).
TAILWIND:	Decrease available field length 11% for each 5 knots (up to 10 knots).
UPHILL SLOPE:	Decrease available field length 20% for each 1% (up to 2%).
DOWNHILL SLOPE:	No adjustments required (up to 2%).
GROUND SPOILERS INOP:	Decrease available field length 800 feet.

GIV-SP Takeoff Planning: Flaps 20° - APA Sea Level, ctd…

AFM APP. A

TAKEOFF PLANNING CHART

GIV-SP **AIRPORT PRESSURE ALTITUDE = SEA LEVEL** **TAKEOFF FLAP 20°**

74,600 LB MTOGW	OAT (°C)	50	45	40	35	30	25	20	15	5	-5	-15
	OAT (°F)	122	113	104	95	86	77	68	59	41	23	5
	RATED EPR	1.59	1.62	1.64	1.67	1.70	1.70	1.70	1.70	1.69	1.69	1.69
-- 60,000 LB --												
V_{FS} = 155 KCAS	FLD LNGTH	4,850	4,530	4,250	4,000	3,770	3,710	3,660	3,600	3,510	3,390	3,280
V_{SE} = 161 KCAS	V_1 KCAS	125	123	122	120	119	119	119	119	120	120	120
V_{REF} = 142 KCAS	V_R KCAS	130	129	129	128	127	127	127	127	127	127	127
MAX TEMP = 50°C	V_2 KCAS	135	135	135	135	135	135	135	135	135	135	135
-- 58,000 LB --												
V_{FS} = 152 KCAS	FLD LNGTH	4,590	4,300	4,030	3,790	3,600	3,540	3,490	3,440	3,340	3,230	3,120
V_{SE} = 158 KCAS	V_1 KCAS	123	121	120	118	117	117	117	117	118	118	118
V_{REF} = 140 KCAS	V_R KCAS	128	128	127	126	126	126	126	126	126	126	126
MAX TEMP = 50°C	V_2 KCAS	133	133	133	133	133	133	133	133	133	133	133
-- 56,000 LB --												
V_{FS} = 150 KCAS	FLD LNGTH	4,340	4,070	3,820	3,650	3,540	3,480	3,430	3,380	3,280	3,180	3,070
V_{SE} = 156 KCAS	V_1 KCAS	121	119	118	117	118	118	118	118	118	118	118
V_{REF} = 137 KCAS	V_R KCAS	127	126	125	124	124	124	124	124	124	124	124
MAX TEMP = 50°C	V_2 KCAS	132	132	132	132	132	132	132	132	132	132	132
-- 54,000 LB --												
V_{FS} = 147 KCAS	FLD LNGTH	4,150	3,890	3,700	3,580	3,480	3,430	3,370	3,320	3,230	3,120	3,020
V_{SE} = 153 KCAS	V_1 KCAS	119	118	117	117	118	118	118	118	118	118	118
V_{REF} = 135 KCAS	V_R KCAS	125	125	124	123	123	123	123	123	123	123	123
MAX TEMP = 50°C	V_2 KCAS	131	131	131	131	131	131	131	131	131	131	131
-- 52,000 LB --												
V_{FS} = 144 KCAS	FLD LNGTH	4,010	3,760	3,630	3,520	3,420	3,370	3,320	3,270	3,170	3,070	2,970
V_{SE} = 150 KCAS	V_1 KCAS	118	117	117	118	118	118	118	118	118	118	119
V_{REF} = 132 KCAS	V_R KCAS	125	124	124	123	122	122	122	122	122	122	122
MAX TEMP = 50°C	V_2 KCAS	131	131	131	131	131	131	131	131	131	131	131
-- 50,000 LB --												
V_{FS} = 142 KCAS	FLD LNGTH	3,860	3,670	3,560	3,450	3,360	3,310	3,260	3,210	3,120	3,020	2,920
V_{SE} = 147 KCAS	V_1 KCAS	118	117	117	118	118	118	118	118	119	119	119
V_{REF} = 130 KCAS	V_R KCAS	125	124	123	122	122	122	122	122	122	122	122
MAX TEMP = 50°C	V_2 KCAS	131	131	131	131	131	131	131	131	131	131	131
-- 48,000 LB --												
V_{FS} = 139 KCAS	FLD LNGTH	3,720	3,600	3,490	3,390	3,300	3,250	3,200	3,150	3,060	2,970	2,870
V_{SE} = 144 KCAS	V_1 KCAS	117	117	118	118	119	119	119	119	119	119	119
V_{REF} = 127 KCAS	V_R KCAS	124	124	123	122	121	121	121	121	121	121	121
MAX TEMP = 50°C	V_2 KCAS	131	131	131	131	131	131	131	131	131	131	131
-- 46,000 LB --												
V_{FS} = 136 KCAS	FLD LNGTH	3,640	3,530	3,420	3,330	3,240	3,190	3,140	3,100	3,010	2,910	2,820
V_{SE} = 141 KCAS	V_1 KCAS	117	118	118	119	119	119	119	119	119	119	120
V_{REF} = 124 KCAS	V_R KCAS	124	123	122	122	121	121	121	121	121	121	121
MAX TEMP = 50°C	V_2 KCAS	131	131	131	131	131	131	131	131	131	131	131

CAUTION: DO NOT REDUCE TAKEOFF EPR BY MORE THAN .15 OR BELOW A MINIMUM VALUE OF 1.56.

NOTES:

HEADWIND:	Increase available field length 2% for each 5 knots (up to 40 knots).
TAILWIND:	Decrease available field length 11% for each 5 knots (up to 10 knots).
UPHILL SLOPE:	Decrease available field length 20% for each 1% (up to 2%).
DOWNHILL SLOPE:	No adjustments required (up to 2%).
GROUND SPOILERS INOP:	Decrease available field length 800 feet.

GIV-SP Takeoff Planning: Flaps 20° - APA 500 Feet

AFM APP. A

TAKEOFF PLANNING CHART

GIV-SP **AIRPORT PRESSURE ALTITUDE = 500 FEET** **TAKEOFF FLAP 20°**

74,600 LB MTOGW	OAT (°C)	49	45	40	35	30	25	20	15	5	-5	-15
	OAT (°F)	120	113	104	95	86	77	68	59	41	23	5
	RATED EPR	1.59	1.62	1.64	1.67	1.70	1.71	1.71	1.71	1.70	1.70	1.70
-- 74,600 LB --												
V_{FS} = 173 KCAS	FLD LNGTH	8,020	7,440	6,870	6,380	5,980	5,810	5,710	5,620	5,480	5,300	5,120
V_{SE} = 180 KCAS	V_1 KCAS	146	145	143	141	140	139	139	139	140	140	140
V_{REF} = 158 KCAS	V_R KCAS	146	146	146	146	145	145	145	145	145	145	145
MAX TEMP = 49°C	V_2 KCAS	150	150	150	150	150	150	150	150	150	150	150
-- 74,000 LB --												
V_{FS} = 172 KCAS	FLD LNGTH	7,830	7,300	6,750	6,270	5,880	5,710	5,620	5,530	5,400	5,210	5,030
V_{SE} = 179 KCAS	V_1 KCAS	145	144	142	140	139	139	139	139	139	139	139
V_{REF} = 158 KCAS	V_R KCAS	145	145	145	145	145	145	145	145	145	145	145
MAX TEMP = 49°C	V_2 KCAS	149	149	149	149	149	149	149	149	149	149	149
-- 72,000 LB --												
V_{FS} = 170 KCAS	FLD LNGTH	7,320	6,860	6,360	5,930	5,570	5,410	5,320	5,240	5,110	4,940	4,770
V_{SE} = 177 KCAS	V_1 KCAS	142	141	139	138	136	136	136	136	136	136	137
V_{REF} = 156 KCAS	V_R KCAS	143	143	143	143	142	142	142	142	142	142	142
MAX TEMP = 49°C	V_2 KCAS	147	147	147	147	147	147	147	147	147	147	147
-- 70,000 LB --												
V_{FS} = 167 KCAS	FLD LNGTH	6,870	6,450	6,000	5,610	5,270	5,120	5,030	4,950	4,830	4,670	4,510
V_{SE} = 174 KCAS	V_1 KCAS	140	138	136	135	134	133	133	133	134	134	134
V_{REF} = 154 KCAS	V_R KCAS	141	141	141	141	140	140	140	140	140	140	140
MAX TEMP = 49°C	V_2 KCAS	145	145	145	145	145	145	145	145	145	145	145
-- 68,000 LB --												
V_{FS} = 165 KCAS	FLD LNGTH	6,440	6,060	5,650	5,290	4,970	4,830	4,750	4,680	4,560	4,410	4,260
V_{SE} = 172 KCAS	V_1 KCAS	136	135	134	132	131	131	131	131	131	131	131
V_{REF} = 151 KCAS	V_R KCAS	139	139	139	138	138	137	137	137	137	137	137
MAX TEMP = 49°C	V_2 KCAS	143	143	143	143	143	143	143	143	143	143	143
-- 66,000 LB --												
V_{FS} = 162 KCAS	FLD LNGTH	6,040	5,690	5,320	4,980	4,690	4,560	4,480	4,410	4,310	4,160	4,020
V_{SE} = 169 KCAS	V_1 KCAS	134	132	131	129	128	128	128	128	128	128	128
V_{REF} = 149 KCAS	V_R KCAS	137	137	136	136	135	135	135	135	135	135	135
MAX TEMP = 49°C	V_2 KCAS	141	141	141	141	141	141	141	141	141	141	141
-- 64,000 LB --												
V_{FS} = 160 KCAS	FLD LNGTH	5,660	5,350	5,000	4,690	4,420	4,300	4,230	4,160	4,060	3,920	3,790
V_{SE} = 166 KCAS	V_1 KCAS	131	130	128	127	125	125	125	125	125	125	126
V_{REF} = 147 KCAS	V_R KCAS	135	134	134	133	133	132	132	132	132	132	132
MAX TEMP = 49°C	V_2 KCAS	139	139	139	139	139	139	139	139	139	139	139
-- 62,000 LB --												
V_{FS} = 157 KCAS	FLD LNGTH	5,300	5,020	4,700	4,410	4,160	4,050	3,980	3,920	3,820	3,690	3,570
V_{SE} = 164 KCAS	V_1 KCAS	128	127	125	124	123	122	122	122	123	123	123
V_{REF} = 144 KCAS	V_R KCAS	132	132	131	131	130	130	130	130	130	130	130
MAX TEMP = 49°C	V_2 KCAS	137	137	137	137	137	137	137	137	137	137	137

CAUTION: DO NOT REDUCE TAKEOFF EPR BY MORE THAN .15 OR BELOW A MINIMUM VALUE OF 1.56.

NOTES:

- HEADWIND: Increase available field length 2% for each 5 knots (up to 40 knots).
- TAILWIND: Decrease available field length 11% for each 5 knots (up to 10 knots).
- UPHILL SLOPE: Decrease available field length 20% for each 1% (up to 2%).
- DOWNHILL SLOPE: No adjustments required (up to 2%).
- GROUND SPOILERS INOP: Decrease available field length 800 feet.

GIV-SP Takeoff Planning: Flaps 20° - APA 500 Feet, ctd…

AFM APP. A

TAKEOFF PLANNING CHART

GIV-SP **AIRPORT PRESSURE ALTITUDE = 500 FEET** **TAKEOFF FLAP 20°**

74,600 LB MTOGW	OAT (°C)	49	45	40	35	30	25	20	15	5	-5	-15
	OAT (°F)	120	113	104	95	86	77	68	59	41	23	5
	RATED EPR	1.59	1.62	1.64	1.67	1.70	1.71	1.71	1.71	1.70	1.70	1.70
-- 60,000 LB --												
V_{FS} = 155 KCAS	FLD LNGTH	4,960	4,710	4,410	4,150	3,910	3,810	3,740	3,680	3,590	3,480	3,360
V_{SE} = 161 KCAS	V_1 KCAS	125	124	122	121	120	119	119	119	120	120	120
V_{REF} = 142 KCAS	V_R KCAS	130	130	129	128	128	127	127	127	127	127	127
MAX TEMP = 49°C	V_2 KCAS	135	135	135	135	135	135	135	135	135	135	135
-- 58,000 LB --												
V_{FS} = 152 KCAS	FLD LNGTH	4,700	4,460	4,190	3,940	3,710	3,620	3,560	3,500	3,410	3,300	3,190
V_{SE} = 158 KCAS	V_1 KCAS	123	122	120	119	118	117	117	117	118	118	118
V_{REF} = 140 KCAS	V_R KCAS	128	128	127	127	126	126	126	126	126	126	126
MAX TEMP = 49°C	V_2 KCAS	133	133	133	133	133	133	133	133	133	133	133
-- 56,000 LB --												
V_{FS} = 150 KCAS	FLD LNGTH	4,450	4,220	3,970	3,750	3,620	3,550	3,500	3,450	3,350	3,240	3,130
V_{SE} = 156 KCAS	V_1 KCAS	121	120	118	117	117	117	118	118	118	118	118
V_{REF} = 137 KCAS	V_R KCAS	127	126	125	125	124	124	124	124	124	124	124
MAX TEMP = 49°C	V_2 KCAS	132	132	132	132	132	132	132	132	132	132	132
-- 54,000 LB --												
V_{FS} = 147 KCAS	FLD LNGTH	4,250	4,040	3,810	3,670	3,560	3,490	3,440	3,390	3,290	3,190	3,080
V_{SE} = 153 KCAS	V_1 KCAS	119	118	117	117	118	118	118	118	118	118	118
V_{REF} = 135 KCAS	V_R KCAS	126	125	124	124	123	123	123	123	123	123	123
MAX TEMP = 49°C	V_2 KCAS	131	131	131	131	131	131	131	131	131	131	131
-- 52,000 LB --												
V_{FS} = 144 KCAS	FLD LNGTH	4,100	3,900	3,720	3,600	3,500	3,430	3,380	3,330	3,230	3,130	3,030
V_{SE} = 150 KCAS	V_1 KCAS	119	117	117	117	118	118	118	118	118	118	119
V_{REF} = 132 KCAS	V_R KCAS	125	125	124	123	123	122	122	122	122	122	122
MAX TEMP = 49°C	V_2 KCAS	131	131	131	131	131	131	131	131	131	131	131
-- 50,000 LB --												
V_{FS} = 142 KCAS	FLD LNGTH	3,950	3,780	3,650	3,540	3,440	3,370	3,320	3,270	3,180	3,080	2,970
V_{SE} = 147 KCAS	V_1 KCAS	118	117	117	118	118	118	118	118	118	119	119
V_{REF} = 130 KCAS	V_R KCAS	125	124	124	123	122	122	122	122	122	122	122
MAX TEMP = 49°C	V_2 KCAS	131	131	131	131	131	131	131	131	131	131	131
-- 48,000 LB --												
V_{FS} = 139 KCAS	FLD LNGTH	3,800	3,690	3,580	3,470	3,370	3,310	3,260	3,210	3,120	3,020	2,920
V_{SE} = 144 KCAS	V_1 KCAS	117	117	117	118	118	119	119	119	119	119	119
V_{REF} = 127 KCAS	V_R KCAS	124	124	123	122	122	121	121	121	121	121	121
MAX TEMP = 49°C	V_2 KCAS	131	131	131	131	131	131	131	131	131	131	131
-- 46,000 LB --												
V_{FS} = 136 KCAS	FLD LNGTH	3,710	3,610	3,500	3,400	3,310	3,250	3,200	3,150	3,060	2,970	2,870
V_{SE} = 141 KCAS	V_1 KCAS	117	117	118	118	119	119	119	119	119	119	119
V_{REF} = 124 KCAS	V_R KCAS	124	123	123	122	121	121	121	121	121	121	121
MAX TEMP = 49°C	V_2 KCAS	131	131	131	131	131	131	131	131	131	131	131

CAUTION: DO NOT REDUCE TAKEOFF EPR BY MORE THAN .15 OR BELOW A MINIMUM VALUE OF 1.56.

NOTES:

HEADWIND:	Increase available field length 2% for each 5 knots (up to 40 knots).
TAILWIND:	Decrease available field length 11% for each 5 knots (up to 10 knots).
UPHILL SLOPE:	Decrease available field length 20% for each 1% (up to 2%).
DOWNHILL SLOPE:	No adjustments required (up to 2%).
GROUND SPOILERS INOP:	Decrease available field length 800 feet.

GIV-SP Takeoff Planning: Flaps 20° - APA 1000 Feet

AFM APP. A

TAKEOFF PLANNING CHART

GIV-SP **AIRPORT PRESSURE ALTITUDE = 1,000 FEET** **TAKEOFF FLAP 20°**

74,600 LB MTOGW	OAT (°C)	48	45	40	35	30	25	20	15	5	-5	-15
	OAT (°F)	118	113	104	95	86	77	68	59	41	23	5
	RATED EPR	1.60	1.62	1.64	1.66	1.70	1.71	1.71	1.71	1.71	1.71	1.71
-- 74,600 LB --												
V_{FS} = 173 KCAS	FLD LNGTH	8,290	7,810	7,160	6,650	6,210	5,970	5,850	5,760	5,620	5,430	5,240
V_{SE} = 180 KCAS	V_1 KCAS	146	145	143	142	140	139	139	140	140	140	140
V_{REF} = 158 KCAS	V_R KCAS	146	146	146	146	146	145	145	145	145	145	145
MAX TEMP = 48°C	V_2 KCAS	150	150	150	150	150	150	150	150	150	150	150
-- 74,000 LB --												
V_{FS} = 172 KCAS	FLD LNGTH	8,090	7,650	7,040	6,540	6,110	5,870	5,760	5,660	5,530	5,340	5,160
V_{SE} = 179 KCAS	V_1 KCAS	145	144	143	141	139	139	139	139	139	139	139
V_{REF} = 158 KCAS	V_R KCAS	145	145	145	145	145	145	145	145	145	145	145
MAX TEMP = 48°C	V_2 KCAS	149	149	149	149	149	149	149	149	149	149	149
-- 72,000 LB --												
V_{FS} = 170 KCAS	FLD LNGTH	7,520	7,170	6,630	6,170	5,790	5,560	5,450	5,360	5,240	5,060	4,880
V_{SE} = 177 KCAS	V_1 KCAS	143	142	140	138	137	136	136	136	136	137	137
V_{REF} = 156 KCAS	V_R KCAS	143	143	143	143	143	142	142	142	142	142	142
MAX TEMP = 48°C	V_2 KCAS	147	147	147	147	147	147	147	147	147	147	147
-- 70,000 LB --												
V_{FS} = 167 KCAS	FLD LNGTH	7,060	6,730	6,240	5,830	5,470	5,260	5,160	5,080	4,950	4,790	4,620
V_{SE} = 174 KCAS	V_1 KCAS	140	139	137	135	134	134	134	134	134	134	134
V_{REF} = 154 KCAS	V_R KCAS	141	141	141	141	140	140	140	140	140	140	140
MAX TEMP = 48°C	V_2 KCAS	145	145	145	145	145	145	145	145	145	145	145
-- 68,000 LB --												
V_{FS} = 165 KCAS	FLD LNGTH	6,610	6,320	5,880	5,500	5,160	4,960	4,870	4,790	4,680	4,520	4,360
V_{SE} = 172 KCAS	V_1 KCAS	137	136	134	133	131	131	131	131	131	131	131
V_{REF} = 151 KCAS	V_R KCAS	139	139	139	138	138	138	137	137	137	137	137
MAX TEMP = 48°C	V_2 KCAS	143	143	143	143	143	143	143	143	143	143	143
-- 66,000 LB --												
V_{FS} = 162 KCAS	FLD LNGTH	6,190	5,930	5,530	5,180	4,870	4,680	4,590	4,520	4,410	4,260	4,120
V_{SE} = 169 KCAS	V_1 KCAS	134	133	131	130	129	128	128	128	128	128	128
V_{REF} = 149 KCAS	V_R KCAS	137	137	137	136	135	135	135	135	135	135	135
MAX TEMP = 48°C	V_2 KCAS	141	141	141	141	141	141	141	141	141	141	141
-- 64,000 LB --												
V_{FS} = 160 KCAS	FLD LNGTH	5,800	5,560	5,200	4,870	4,580	4,410	4,330	4,260	4,160	4,020	3,880
V_{SE} = 166 KCAS	V_1 KCAS	131	130	129	127	126	125	125	125	126	126	126
V_{REF} = 147 KCAS	V_R KCAS	135	135	134	134	133	133	133	133	133	133	133
MAX TEMP = 48°C	V_2 KCAS	139	139	139	139	139	139	139	139	139	139	139
-- 62,000 LB --												
V_{FS} = 157 KCAS	FLD LNGTH	5,430	5,220	4,880	4,580	4,320	4,150	4,080	4,010	3,910	3,780	3,650
V_{SE} = 164 KCAS	V_1 KCAS	128	127	126	124	123	122	122	122	123	123	123
V_{REF} = 144 KCAS	V_R KCAS	132	132	132	131	130	130	130	130	130	130	130
MAX TEMP = 48°C	V_2 KCAS	137	137	137	137	137	137	137	137	137	137	137

CAUTION: DO NOT REDUCE TAKEOFF EPR BY MORE THAN .15 OR BELOW A MINIMUM VALUE OF 1.56.

NOTES:

HEADWIND:	Increase available field length 2% for each 5 knots (up to 40 knots).
TAILWIND:	Decrease available field length 11% for each 5 knots (up to 10 knots).
UPHILL SLOPE:	Decrease available field length 20% for each 1% (up to 2%).
DOWNHILL SLOPE:	No adjustments required (up to 2%).
GROUND SPOILERS INOP:	Decrease available field length 800 feet.

GIV-SP Takeoff Planning: Flaps 20° - APA 1000 Feet, ctd…

AFM APP. A

TAKEOFF PLANNING CHART

GIV-SP **AIRPORT PRESSURE ALTITUDE = 1,000 FEET** **TAKEOFF FLAP 20°**

74,600 LB MTOGW	OAT (°C)	48	45	40	35	30	25	20	15	5	-5	-15
	OAT (°F)	118	113	104	95	86	77	68	59	41	23	5
	RATED EPR	1.60	1.62	1.64	1.66	1.70	1.71	1.71	1.71	1.71	1.71	1.71
-- 60,000 LB --												
V_{FS} = 155 KCAS	FLD LNGTH	5,080	4,890	4,580	4,310	4,060	3,910	3,830	3,770	3,680	3,560	3,440
V_{SE} = 161 KCAS	V_1 KCAS	125	124	123	122	120	120	120	120	120	120	120
V_{REF} = 142 KCAS	V_R KCAS	130	130	129	129	128	128	128	128	128	128	128
MAX TEMP = 48°C	V_2 KCAS	135	135	135	135	135	135	135	135	135	135	135
-- 58,000 LB --												
V_{FS} = 152 KCAS	FLD LNGTH	4,820	4,630	4,350	4,080	3,850	3,710	3,640	3,580	3,500	3,380	3,260
V_{SE} = 158 KCAS	V_1 KCAS	123	122	121	119	118	117	117	117	118	118	118
V_{REF} = 140 KCAS	V_R KCAS	128	128	127	127	126	126	126	126	126	126	126
MAX TEMP = 48°C	V_2 KCAS	133	133	133	133	133	133	133	133	133	133	133
-- 56,000 LB --												
V_{FS} = 150 KCAS	FLD LNGTH	4,560	4,380	4,120	3,870	3,710	3,630	3,570	3,510	3,410	3,300	3,190
V_{SE} = 156 KCAS	V_1 KCAS	121	120	119	117	117	117	117	118	118	118	118
V_{REF} = 137 KCAS	V_R KCAS	127	126	126	125	124	124	124	124	124	124	124
MAX TEMP = 48°C	V_2 KCAS	132	132	132	132	132	132	132	132	132	132	132
-- 54,000 LB --												
V_{FS} = 147 KCAS	FLD LNGTH	4,350	4,190	3,940	3,760	3,650	3,560	3,510	3,450	3,360	3,250	3,140
V_{SE} = 153 KCAS	V_1 KCAS	119	119	117	117	117	118	118	118	118	118	118
V_{REF} = 135 KCAS	V_R KCAS	126	125	125	124	123	123	123	123	123	123	123
MAX TEMP = 48°C	V_2 KCAS	131	131	131	131	131	131	131	131	131	131	131
-- 52,000 LB --												
V_{FS} = 144 KCAS	FLD LNGTH	4,200	4,040	3,830	3,690	3,580	3,500	3,450	3,390	3,300	3,190	3,080
V_{SE} = 150 KCAS	V_1 KCAS	119	118	117	117	118	118	118	118	118	118	118
V_{REF} = 132 KCAS	V_R KCAS	125	125	124	124	123	122	122	122	122	122	122
MAX TEMP = 48°C	V_2 KCAS	131	131	131	131	131	131	131	131	131	131	131
-- 50,000 LB --												
V_{FS} = 142 KCAS	FLD LNGTH	4,050	3,900	3,740	3,620	3,520	3,440	3,390	3,330	3,240	3,140	3,030
V_{SE} = 147 KCAS	V_1 KCAS	118	117	117	117	118	118	118	118	118	118	119
V_{REF} = 130 KCAS	V_R KCAS	125	125	124	123	122	122	122	122	122	122	122
MAX TEMP = 48°C	V_2 KCAS	131	131	131	131	131	131	131	131	131	131	131
-- 48,000 LB --												
V_{FS} = 139 KCAS	FLD LNGTH	3,900	3,800	3,660	3,550	3,450	3,380	3,320	3,270	3,180	3,080	2,980
V_{SE} = 144 KCAS	V_1 KCAS	117	117	117	118	118	118	119	119	119	119	119
V_{REF} = 127 KCAS	V_R KCAS	124	124	123	123	122	122	121	121	121	121	121
MAX TEMP = 48°C	V_2 KCAS	131	131	131	131	131	131	131	131	131	131	131
-- 46,000 LB --												
V_{FS} = 136 KCAS	FLD LNGTH	3,780	3,700	3,590	3,480	3,390	3,320	3,260	3,210	3,120	3,020	2,920
V_{SE} = 141 KCAS	V_1 KCAS	117	117	117	118	118	119	119	119	119	119	119
V_{REF} = 124 KCAS	V_R KCAS	124	124	123	122	121	121	121	121	121	121	121
MAX TEMP = 48°C	V_2 KCAS	131	131	131	131	131	131	131	131	131	131	131

CAUTION: DO NOT REDUCE TAKEOFF EPR BY MORE THAN .15 OR BELOW A MINIMUM VALUE OF 1.56.

NOTES:

HEADWIND: Increase available field length 2% for each 5 knots (up to 40 knots).
TAILWIND: Decrease available field length 11% for each 5 knots (up to 10 knots).
UPHILL SLOPE: Decrease available field length 20% for each 1% (up to 2%).
DOWNHILL SLOPE: No adjustments required (up to 2%).
GROUND SPOILERS INOP: Decrease available field length 800 feet.

GIV-SP Takeoff Planning: Flaps 20° - APA 2000 Feet

AFM APP. A

TAKEOFF PLANNING CHART

GIV-SP **AIRPORT PRESSURE ALTITUDE = 2,000 FEET** **TAKEOFF FLAP 20°**

74,600 LB MTOGW	OAT (°C)	45	40	35	30	25	20	15	10	0	-10	-19
	OAT (°F)	113	104	95	86	77	68	59	50	32	14	-2
	RATED EPR	1.62	1.64	1.66	1.69	1.71	1.72	1.72	1.72	1.72	1.72	1.72
-- 74,600 LB --												
V_{FS} = 173 KCAS	FLD LNGTH	8,720	7,810	7,220	6,730	6,360	6,220	6,080	5,950	5,800	5,610	5,430
V_{SE} = 180 KCAS	V_1 KCAS	146	145	143	141	140	140	140	140	140	140	140
V_{REF} = 158 KCAS	V_R KCAS	146	146	146	146	146	146	146	145	145	145	145
MAX TEMP = 45°C	V_2 KCAS	150	150	150	150	150	150	150	150	150	150	150
-- 74,000 LB --												
V_{FS} = 172 KCAS	FLD LNGTH	8,510	7,670	7,100	6,620	6,260	6,120	5,980	5,860	5,710	5,520	5,340
V_{SE} = 179 KCAS	V_1 KCAS	145	144	142	141	140	139	139	139	139	139	140
V_{REF} = 158 KCAS	V_R KCAS	145	145	145	145	145	145	145	145	145	145	145
MAX TEMP = 45°C	V_2 KCAS	149	149	149	149	149	149	149	149	149	149	149
-- 72,000 LB --												
V_{FS} = 170 KCAS	FLD LNGTH	7,870	7,210	6,690	6,260	5,930	5,790	5,660	5,550	5,410	5,220	5,060
V_{SE} = 177 KCAS	V_1 KCAS	143	141	139	138	137	137	137	136	137	137	137
V_{REF} = 156 KCAS	V_R KCAS	143	143	143	143	143	143	143	142	142	142	142
MAX TEMP = 46°C	V_2 KCAS	147	147	147	147	147	147	147	147	147	147	147
-- 70,000 LB --												
V_{FS} = 167 KCAS	FLD LNGTH	7,350	6,780	6,310	5,910	5,610	5,480	5,360	5,250	5,120	4,940	4,790
V_{SE} = 174 KCAS	V_1 KCAS	140	138	137	135	134	134	134	134	134	134	134
V_{REF} = 154 KCAS	V_R KCAS	141	141	141	141	140	140	140	140	140	140	140
MAX TEMP = 46°C	V_2 KCAS	145	145	145	145	145	145	145	145	145	145	145
-- 68,000 LB --												
V_{FS} = 165 KCAS	FLD LNGTH	6,880	6,370	5,940	5,570	5,290	5,170	5,060	4,950	4,830	4,670	4,520
V_{SE} = 172 KCAS	V_1 KCAS	137	135	134	132	132	131	131	131	131	131	132
V_{REF} = 151 KCAS	V_R KCAS	139	139	139	138	138	138	138	138	138	138	138
MAX TEMP = 46°C	V_2 KCAS	143	143	143	143	143	143	143	143	143	143	143
-- 66,000 LB --												
V_{FS} = 162 KCAS	FLD LNGTH	6,440	5,980	5,590	5,250	4,990	4,880	4,770	4,670	4,550	4,400	4,260
V_{SE} = 169 KCAS	V_1 KCAS	134	132	131	130	129	129	129	128	129	129	129
V_{REF} = 149 KCAS	V_R KCAS	137	137	136	136	135	135	135	135	135	135	135
MAX TEMP = 46°C	V_2 KCAS	141	141	141	141	141	141	141	141	141	141	141
-- 64,000 LB --												
V_{FS} = 160 KCAS	FLD LNGTH	6,030	5,610	5,260	4,940	4,700	4,590	4,490	4,400	4,290	4,150	4,010
V_{SE} = 166 KCAS	V_1 KCAS	131	130	128	127	126	126	126	126	126	126	126
V_{REF} = 147 KCAS	V_R KCAS	135	135	134	133	133	133	133	133	133	133	133
MAX TEMP = 46°C	V_2 KCAS	139	139	139	139	139	139	139	139	139	139	139
-- 62,000 LB --												
V_{FS} = 157 KCAS	FLD LNGTH	5,640	5,270	4,940	4,650	4,420	4,320	4,230	4,140	4,040	3,900	3,780
V_{SE} = 164 KCAS	V_1 KCAS	128	127	126	124	123	123	123	123	123	123	123
V_{REF} = 145 KCAS	V_R KCAS	133	132	132	131	130	130	130	130	130	130	130
MAX TEMP = 46°C	V_2 KCAS	137	137	137	137	137	137	137	137	137	137	137

CAUTION: DO NOT REDUCE TAKEOFF EPR BY MORE THAN .15 OR BELOW A MINIMUM VALUE OF 1.56.

NOTES:

HEADWIND: Increase available field length 2% for each 5 knots (up to 40 knots).
TAILWIND: Decrease available field length 11% for each 5 knots (up to 10 knots).
UPHILL SLOPE: Decrease available field length 20% for each 1% (up to 2%).
DOWNHILL SLOPE: No adjustments required (up to 2%).
GROUND SPOILERS INOP: Decrease available field length 800 feet.

GIV-SP Takeoff Planning: Flaps 20° - APA 2000 Feet, ctd…

AFM APP. A

TAKEOFF PLANNING CHART

GIV-SP **AIRPORT PRESSURE ALTITUDE = 2,000 FEET** **TAKEOFF FLAP 20°**

74,600 LB MTOGW	OAT (°C)	45	40	35	30	25	20	15	10	0	-10	-19
	OAT (°F)	113	104	95	86	77	68	59	50	32	14	-2
	RATED EPR	1.62	1.64	1.66	1.69	1.71	1.72	1.72	1.72	1.72	1.72	1.72
-- 60,000 LB --												
V_{FS} = 155 KCAS	FLD LNGTH	5,280	4,940	4,640	4,370	4,150	4,060	3,980	3,890	3,800	3,670	3,550
V_{SE} = 161 KCAS	V_1 KCAS	125	124	123	121	120	120	120	120	120	120	120
V_{REF} = 142 KCAS	V_R KCAS	130	130	129	128	128	128	128	128	128	128	128
MAX TEMP = 46°C	V_2 KCAS	135	135	135	135	135	135	135	135	135	135	135
-- 58,000 LB --												
V_{FS} = 152 KCAS	FLD LNGTH	5,000	4,680	4,400	4,140	3,940	3,860	3,780	3,700	3,610	3,480	3,370
V_{SE} = 158 KCAS	V_1 KCAS	123	122	121	119	118	118	118	118	118	118	118
V_{REF} = 140 KCAS	V_R KCAS	129	128	127	127	126	126	126	126	126	126	126
MAX TEMP = 46°C	V_2 KCAS	133	133	133	133	133	133	133	133	133	133	133
-- 56,000 LB --												
V_{FS} = 150 KCAS	FLD LNGTH	4,730	4,430	4,170	3,940	3,790	3,730	3,660	3,600	3,490	3,380	3,270
V_{SE} = 156 KCAS	V_1 KCAS	121	120	118	117	117	117	117	117	117	117	118
V_{REF} = 137 KCAS	V_R KCAS	127	126	126	125	124	124	124	124	124	124	124
MAX TEMP = 46°C	V_2 KCAS	132	132	132	132	132	132	132	132	132	132	132
-- 54,000 LB --												
V_{FS} = 147 KCAS	FLD LNGTH	4,520	4,240	4,000	3,830	3,730	3,660	3,600	3,540	3,430	3,320	3,220
V_{SE} = 153 KCAS	V_1 KCAS	120	118	117	117	117	117	117	118	118	118	118
V_{REF} = 135 KCAS	V_R KCAS	126	125	124	124	123	123	123	123	123	123	123
MAX TEMP = 46°C	V_2 KCAS	131	131	131	131	131	131	131	131	131	131	131
-- 52,000 LB --												
V_{FS} = 144 KCAS	FLD LNGTH	4,360	4,090	3,880	3,760	3,660	3,600	3,530	3,470	3,370	3,260	3,160
V_{SE} = 150 KCAS	V_1 KCAS	119	118	117	117	117	117	118	118	118	118	118
V_{REF} = 132 KCAS	V_R KCAS	125	125	124	123	123	123	123	123	123	123	123
MAX TEMP = 46°C	V_2 KCAS	131	131	131	131	131	131	131	131	131	131	131
-- 50,000 LB --												
V_{FS} = 142 KCAS	FLD LNGTH	4,200	3,960	3,800	3,690	3,590	3,530	3,470	3,410	3,310	3,200	3,110
V_{SE} = 147 KCAS	V_1 KCAS	118	117	117	117	118	118	118	118	118	118	118
V_{REF} = 130 KCAS	V_R KCAS	125	124	124	123	122	122	122	122	122	122	122
MAX TEMP = 46°C	V_2 KCAS	131	131	131	131	131	131	131	131	131	131	131
-- 48,000 LB --												
V_{FS} = 139 KCAS	FLD LNGTH	4,050	3,850	3,730	3,620	3,520	3,460	3,410	3,350	3,250	3,140	3,050
V_{SE} = 144 KCAS	V_1 KCAS	118	117	117	118	118	118	118	118	118	119	119
V_{REF} = 127 KCAS	V_R KCAS	125	124	123	123	122	122	122	122	122	122	122
MAX TEMP = 46°C	V_2 KCAS	131	131	131	131	131	131	131	131	131	131	131
-- 46,000 LB --												
V_{FS} = 136 KCAS	FLD LNGTH	3,900	3,770	3,650	3,550	3,460	3,400	3,340	3,290	3,190	3,090	2,990
V_{SE} = 141 KCAS	V_1 KCAS	117	117	117	118	118	118	119	119	119	119	119
V_{REF} = 124 KCAS	V_R KCAS	124	123	123	122	122	121	121	121	121	121	121
MAX TEMP = 46°C	V_2 KCAS	131	131	131	131	131	131	131	131	131	131	131

CAUTION: DO NOT REDUCE TAKEOFF EPR BY MORE THAN .15 OR BELOW A MINIMUM VALUE OF 1.56.

NOTES:

HEADWIND: Increase available field length 2% for each 5 knots (up to 40 knots).
TAILWIND: Decrease available field length 11% for each 5 knots (up to 10 knots).
UPHILL SLOPE: Decrease available field length 20% for each 1% (up to 2%).
DOWNHILL SLOPE: No adjustments required (up to 2%).
GROUND SPOILERS INOP: Decrease available field length 800 feet.

GIV-SP Takeoff Planning: Flaps 20° - APA 4000 Feet

AFM APP. A

TAKEOFF PLANNING CHART

GIV-SP **AIRPORT PRESSURE ALTITUDE = 4,000 FEET** **TAKEOFF FLAP 20°**

74,600 LB MTOGW	OAT (°C)	40	35	30	25	20	15	10	5	-5	-15	-23
	OAT (°F)	104	95	86	77	68	59	50	41	23	5	-9
	RATED EPR	1.63	1.66	1.69	1.71	1.72	1.74	1.74	1.74	1.74	1.74	1.74
-- 74,600 LB --												
V_{FS} = 174 KCAS	FLD LNGTH	******	8,800	8,070	7,590	7,270	7,000	6,780	6,660	6,410	6,190	6,010
V_{SE} = 181 KCAS	V_1 KCAS	******	146	145	144	143	142	142	142	142	142	142
V_{REF} = 159 KCAS	V_R KCAS	******	147	147	147	147	147	147	147	147	147	147
MAX TEMP = 37°C	V_2 KCAS	******	151	151	151	151	151	151	151	151	151	151
-- 74,000 LB --												
V_{FS} = 174 KCAS	FLD LNGTH	******	8,610	7,930	7,460	7,150	6,890	6,670	6,550	6,310	6,090	5,910
V_{SE} = 181 KCAS	V_1 KCAS	******	146	144	143	142	142	141	141	141	141	141
V_{REF} = 158 KCAS	V_R KCAS	******	146	146	146	146	146	146	146	146	146	146
MAX TEMP = 37°C	V_2 KCAS	******	150	150	150	150	150	150	150	150	150	150
-- 72,000 LB --												
V_{FS} = 171 KCAS	FLD LNGTH	8,910	8,050	7,470	7,040	6,750	6,510	6,310	6,200	5,970	5,760	5,600
V_{SE} = 178 KCAS	V_1 KCAS	144	143	141	140	139	139	139	139	139	139	139
V_{REF} = 156 KCAS	V_R KCAS	144	144	144	144	144	144	144	144	144	144	144
MAX TEMP = 41°C	V_2 KCAS	148	148	148	148	148	148	148	148	148	148	148
-- 70,000 LB --												
V_{FS} = 169 KCAS	FLD LNGTH	8,260	7,570	7,040	6,640	6,370	6,150	5,960	5,870	5,650	5,450	5,300
V_{SE} = 176 KCAS	V_1 KCAS	142	140	138	137	137	136	136	136	136	136	136
V_{REF} = 154 KCAS	V_R KCAS	142	142	142	142	142	142	142	142	142	142	142
MAX TEMP = 42°C	V_2 KCAS	146	146	146	146	146	146	146	146	146	146	146
-- 68,000 LB --												
V_{FS} = 166 KCAS	FLD LNGTH	7,670	7,090	6,610	6,250	6,010	5,800	5,630	5,540	5,330	5,140	5,000
V_{SE} = 173 KCAS	V_1 KCAS	139	137	136	135	134	134	133	133	133	133	133
V_{REF} = 151 KCAS	V_R KCAS	140	140	140	140	140	139	139	139	139	139	139
MAX TEMP = 42°C	V_2 KCAS	144	144	144	144	144	144	144	144	144	144	144
-- 66,000 LB --												
V_{FS} = 164 KCAS	FLD LNGTH	7,170	6,650	6,210	5,890	5,660	5,470	5,300	5,220	5,020	4,850	4,710
V_{SE} = 171 KCAS	V_1 KCAS	136	134	133	132	131	131	130	130	130	130	130
V_{REF} = 149 KCAS	V_R KCAS	138	138	138	137	137	137	137	137	137	137	137
MAX TEMP = 42°C	V_2 KCAS	142	142	142	142	142	142	142	142	142	142	142
-- 64,000 LB --												
V_{FS} = 161 KCAS	FLD LNGTH	6,700	6,230	5,830	5,540	5,330	5,150	4,990	4,910	4,730	4,570	4,440
V_{SE} = 168 KCAS	V_1 KCAS	133	131	130	129	128	128	128	128	128	128	128
V_{REF} = 147 KCAS	V_R KCAS	136	136	135	135	135	134	134	134	134	134	134
MAX TEMP = 42°C	V_2 KCAS	140	140	140	140	140	140	140	140	140	140	140
-- 62,000 LB --												
V_{FS} = 159 KCAS	FLD LNGTH	6,270	5,840	5,480	5,200	5,010	4,840	4,700	4,620	4,450	4,300	4,180
V_{SE} = 165 KCAS	V_1 KCAS	130	129	127	126	126	125	125	125	125	125	125
V_{REF} = 145 KCAS	V_R KCAS	134	133	133	132	132	132	132	132	132	132	132
MAX TEMP = 42°C	V_2 KCAS	138	138	138	138	138	138	138	138	138	138	138

CAUTION: DO NOT REDUCE TAKEOFF EPR BY MORE THAN .15 OR BELOW A MINIMUM VALUE OF 1.56.

NOTES:

HEADWIND:	Increase available field length 2% for each 5 knots (up to 40 knots).
TAILWIND:	Decrease available field length 11% for each 5 knots (up to 10 knots).
UPHILL SLOPE:	Decrease available field length 20% for each 1% (up to 2%).
DOWNHILL SLOPE:	No adjustments required (up to 2%).
GROUND SPOILERS INOP:	Decrease available field length 800 feet.

GIV-SP Takeoff Planning: Flaps 20° - APA 4000 Feet, ctd…

AFM APP. A

TAKEOFF PLANNING CHART

GIV-SP **AIRPORT PRESSURE ALTITUDE = 4,000 FEET** **TAKEOFF FLAP 20°**

74,600 LB MTOGW	OAT (°C)	40	35	30	25	20	15	10	5	-5	-15	-23
	OAT (°F)	104	95	86	77	68	59	50	41	23	5	-9
	RATED EPR	1.63	1.66	1.69	1.71	1.72	1.74	1.74	1.74	1.74	1.74	1.74
-- 60,000 LB --												
V_{FS} = 156 KCAS	FLD LNGTH	5,850	5,470	5,140	4,880	4,700	4,550	4,410	4,340	4,180	4,040	3,920
V_{SE} = 163 KCAS	V_1 KCAS	127	126	124	123	123	122	122	122	122	122	122
V_{REF} = 142 KCAS	V_R KCAS	131	131	130	130	130	129	129	129	129	129	129
MAX TEMP = 42°C	V_2 KCAS	135	135	135	135	135	135	135	135	135	135	135
-- 58,000 LB --												
V_{FS} = 154 KCAS	FLD LNGTH	5,510	5,150	4,850	4,610	4,440	4,290	4,170	4,100	3,950	3,810	3,700
V_{SE} = 160 KCAS	V_1 KCAS	125	123	122	121	120	120	119	120	119	120	120
V_{REF} = 140 KCAS	V_R KCAS	129	129	128	128	128	127	127	127	127	127	127
MAX TEMP = 42°C	V_2 KCAS	134	134	134	134	134	134	134	134	134	134	134
-- 56,000 LB --												
V_{FS} = 151 KCAS	FLD LNGTH	5,170	4,850	4,570	4,340	4,180	4,050	3,930	3,870	3,730	3,600	3,500
V_{SE} = 157 KCAS	V_1 KCAS	122	121	119	119	118	117	117	117	117	117	117
V_{REF} = 137 KCAS	V_R KCAS	127	127	126	126	125	125	125	125	125	125	125
MAX TEMP = 42°C	V_2 KCAS	132	132	132	132	132	132	132	132	132	132	132
-- 54,000 LB --												
V_{FS} = 148 KCAS	FLD LNGTH	4,920	4,620	4,350	4,140	4,020	3,930	3,850	3,790	3,660	3,530	3,440
V_{SE} = 154 KCAS	V_1 KCAS	120	119	118	117	117	117	117	117	117	117	117
V_{REF} = 135 KCAS	V_R KCAS	126	126	125	124	124	124	124	124	123	123	123
MAX TEMP = 42°C	V_2 KCAS	131	131	131	131	131	131	131	131	131	131	131
-- 52,000 LB --												
V_{FS} = 146 KCAS	FLD LNGTH	4,750	4,460	4,210	4,040	3,940	3,860	3,780	3,720	3,590	3,470	3,380
V_{SE} = 151 KCAS	V_1 KCAS	120	118	117	117	117	117	117	117	117	117	118
V_{REF} = 132 KCAS	V_R KCAS	126	125	125	124	124	123	123	123	123	123	123
MAX TEMP = 42°C	V_2 KCAS	131	131	131	131	131	131	131	131	131	131	131
-- 50,000 LB --												
V_{FS} = 143 KCAS	FLD LNGTH	4,580	4,300	4,080	3,960	3,870	3,780	3,710	3,650	3,520	3,410	3,310
V_{SE} = 148 KCAS	V_1 KCAS	119	118	117	117	117	117	118	118	118	118	118
V_{REF} = 130 KCAS	V_R KCAS	125	125	124	124	123	123	123	123	123	123	123
MAX TEMP = 42°C	V_2 KCAS	131	131	131	131	131	131	131	131	131	131	131
-- 48,000 LB --												
V_{FS} = 140 KCAS	FLD LNGTH	4,400	4,160	3,990	3,880	3,790	3,710	3,630	3,580	3,460	3,340	3,250
V_{SE} = 145 KCAS	V_1 KCAS	118	117	117	117	117	118	118	118	118	118	118
V_{REF} = 127 KCAS	V_R KCAS	125	124	124	123	123	123	122	122	122	122	122
MAX TEMP = 42°C	V_2 KCAS	131	131	131	131	131	131	131	131	131	131	131
-- 46,000 LB --												
V_{FS} = 137 KCAS	FLD LNGTH	4,230	4,030	3,900	3,800	3,710	3,640	3,560	3,510	3,390	3,280	3,190
V_{SE} = 142 KCAS	V_1 KCAS	117	117	117	117	118	118	118	118	118	118	119
V_{REF} = 124 KCAS	V_R KCAS	125	124	123	123	122	122	122	122	122	122	122
MAX TEMP = 42°C	V_2 KCAS	131	131	131	131	131	131	131	131	131	131	131

CAUTION: DO NOT REDUCE TAKEOFF EPR BY MORE THAN .15 OR BELOW A MINIMUM VALUE OF 1.56.

NOTES:

HEADWIND:	Increase available field length 2% for each 5 knots (up to 40 knots).
TAILWIND:	Decrease available field length 11% for each 5 knots (up to 10 knots).
UPHILL SLOPE:	Decrease available field length 20% for each 1% (up to 2%).
DOWNHILL SLOPE:	No adjustments required (up to 2%).
GROUND SPOILERS INOP:	Decrease available field length 800 feet.

GIV-SP Takeoff Planning: Flaps 20° - APA 6000 Feet

AFM APP. A

TAKEOFF PLANNING CHART

GIV-SP **AIRPORT PRESSURE ALTITUDE = 6,000 FEET** **TAKEOFF FLAP 20°**

74,600 LB MTOGW	OAT (°C)	38	35	30	25	20	15	10	5	-5	-15	-25
	OAT (°F)	101	95	86	77	68	59	50	41	23	5	-13
	RATED EPR	1.64	1.65	1.68	1.71	1.72	1.73	1.74	1.74	1.75	1.75	1.75
-- 74,600 LB --												
V_{FS} = 177 KCAS	FLD LNGTH	******	******	******	9,280	8,830	8,480	8,160	7,970	7,600	7,340	7,070
V_{SE} = 184 KCAS	V_1 KCAS	******	******	******	148	147	146	146	146	145	145	146
V_{REF} = 159 KCAS	V_R KCAS	******	******	******	148	148	148	148	148	148	148	148
MAX TEMP = 29°C	V_2 KCAS	******	******	******	152	152	152	152	152	152	152	152
-- 74,000 LB --												
V_{FS} = 176 KCAS	FLD LNGTH	******	******	******	9,090	8,670	8,330	8,020	7,830	7,470	7,210	6,950
V_{SE} = 183 KCAS	V_1 KCAS	******	******	******	147	146	146	145	145	145	145	145
V_{REF} = 159 KCAS	V_R KCAS	******	******	******	148	148	148	148	148	148	148	148
MAX TEMP = 29°C	V_2 KCAS	******	******	******	152	152	152	152	152	152	152	152
-- 72,000 LB --												
V_{FS} = 174 KCAS	FLD LNGTH	******	******	9,170	8,540	8,160	7,850	7,560	7,380	7,050	6,800	6,560
V_{SE} = 181 KCAS	V_1 KCAS	******	******	145	144	143	143	142	142	142	142	142
V_{REF} = 157 KCAS	V_R KCAS	******	******	146	146	146	146	146	146	146	146	146
MAX TEMP = 32°C	V_2 KCAS	******	******	150	150	150	150	150	150	150	150	150
-- 70,000 LB --												
V_{FS} = 171 KCAS	FLD LNGTH	******	9,410	8,540	8,030	7,680	7,400	7,130	6,960	6,650	6,410	6,180
V_{SE} = 178 KCAS	V_1 KCAS	******	144	143	141	141	140	140	139	139	139	139
V_{REF} = 154 KCAS	V_R KCAS	******	144	144	144	144	144	144	144	144	144	144
MAX TEMP = 35°C	V_2 KCAS	******	148	148	148	148	148	148	148	148	148	148
-- 68,000 LB --												
V_{FS} = 169 KCAS	FLD LNGTH	9,260	8,700	7,990	7,530	7,220	6,950	6,710	6,550	6,260	6,040	5,820
V_{SE} = 175 KCAS	V_1 KCAS	141	141	140	138	138	137	137	136	136	136	137
V_{REF} = 152 KCAS	V_R KCAS	142	142	142	142	142	141	141	141	141	141	141
MAX TEMP = 38°C	V_2 KCAS	146	146	146	146	146	146	146	146	146	146	146
-- 66,000 LB --												
V_{FS} = 166 KCAS	FLD LNGTH	8,470	8,070	7,480	7,060	6,770	6,530	6,310	6,160	5,900	5,690	5,480
V_{SE} = 173 KCAS	V_1 KCAS	139	138	137	135	135	134	134	134	134	134	134
V_{REF} = 150 KCAS	V_R KCAS	139	139	139	139	139	139	139	139	139	139	139
MAX TEMP = 38°C	V_2 KCAS	143	143	143	143	143	143	143	143	143	143	143
-- 64,000 LB --												
V_{FS} = 163 KCAS	FLD LNGTH	7,890	7,530	7,000	6,620	6,360	6,140	5,930	5,800	5,550	5,350	5,160
V_{SE} = 170 KCAS	V_1 KCAS	136	135	134	133	132	131	131	131	131	131	131
V_{REF} = 148 KCAS	V_R KCAS	137	137	137	137	137	137	137	136	136	136	136
MAX TEMP = 38°C	V_2 KCAS	141	141	141	141	141	141	141	141	141	141	141
-- 62,000 LB --												
V_{FS} = 161 KCAS	FLD LNGTH	7,350	7,030	6,550	6,210	5,970	5,760	5,570	5,450	5,210	5,030	4,850
V_{SE} = 167 KCAS	V_1 KCAS	133	132	131	130	129	129	128	128	128	128	128
V_{REF} = 145 KCAS	V_R KCAS	135	135	135	135	134	134	134	134	134	134	134
MAX TEMP = 38°C	V_2 KCAS	139	139	139	139	139	139	139	139	139	139	139

CAUTION: DO NOT REDUCE TAKEOFF EPR BY MORE THAN .15 OR BELOW A MINIMUM VALUE OF 1.56.

NOTES:

HEADWIND: Increase available field length 2% for each 5 knots (up to 40 knots).
TAILWIND: Not permitted using this data at this pressure altitude.
UPHILL SLOPE: Decrease available field length 20% for each 1% (up to 2%).
DOWNHILL SLOPE: Not permitted using this data at this pressure altitude.
GROUND SPOILERS INOP: Decrease available field length 800 feet.

GIV-SP Takeoff Planning: Flaps 20° - APA 6000 Feet, ctd…

AFM APP. A

TAKEOFF PLANNING CHART

GIV-SP **AIRPORT PRESSURE ALTITUDE = 6,000 FEET** **TAKEOFF FLAP 20°**

74,600 LB MTOGW	OAT (°C)	38	35	30	25	20	15	10	5	-5	-15	-25
	OAT (°F)	101	95	86	77	68	59	50	41	23	5	-13
	RATED EPR	1.64	1.65	1.68	1.71	1.72	1.73	1.74	1.74	1.75	1.75	1.75
-- 60,000 LB --												
V_{FS} = 158 KCAS	FLD LNGTH	6,850	6,560	6,130	5,820	5,600	5,410	5,230	5,110	4,890	4,720	4,550
V_{SE} = 165 KCAS	V_1 KCAS	130	129	128	127	126	126	125	125	125	125	125
V_{REF} = 143 KCAS	V_R KCAS	133	133	133	132	132	132	132	131	131	131	131
MAX TEMP = 38°C	V_2 KCAS	137	137	137	137	137	137	137	137	137	137	137
-- 58,000 LB --												
V_{FS} = 156 KCAS	FLD LNGTH	6,370	6,110	5,720	5,440	5,230	5,060	4,890	4,790	4,580	4,420	4,260
V_{SE} = 162 KCAS	V_1 KCAS	127	126	125	124	123	123	122	122	122	122	122
V_{REF} = 140 KCAS	V_R KCAS	130	130	130	130	129	129	129	129	129	129	129
MAX TEMP = 38°C	V_2 KCAS	134	134	134	134	134	134	134	134	134	134	134
-- 56,000 LB --												
V_{FS} = 153 KCAS	FLD LNGTH	5,920	5,690	5,340	5,080	4,890	4,730	4,570	4,480	4,290	4,140	3,990
V_{SE} = 159 KCAS	V_1 KCAS	124	123	122	121	120	120	119	119	119	119	119
V_{REF} = 138 KCAS	V_R KCAS	128	128	127	127	127	126	126	126	126	126	126
MAX TEMP = 38°C	V_2 KCAS	132	132	132	132	132	132	132	132	132	132	132
-- 54,000 LB --												
V_{FS} = 150 KCAS	FLD LNGTH	5,600	5,390	5,070	4,820	4,640	4,490	4,350	4,250	4,070	3,930	3,790
V_{SE} = 156 KCAS	V_1 KCAS	122	121	120	119	118	118	117	117	117	117	117
V_{REF} = 135 KCAS	V_R KCAS	127	126	126	125	125	125	125	125	124	124	124
MAX TEMP = 38°C	V_2 KCAS	131	131	131	131	131	131	131	131	131	131	131
-- 52,000 LB --												
V_{FS} = 147 KCAS	FLD LNGTH	5,400	5,200	4,890	4,650	4,480	4,340	4,200	4,110	3,950	3,820	3,690
V_{SE} = 153 KCAS	V_1 KCAS	121	120	119	118	118	117	117	117	117	117	117
V_{REF} = 133 KCAS	V_R KCAS	126	126	126	125	125	125	124	124	124	124	124
MAX TEMP = 38°C	V_2 KCAS	131	131	131	131	131	131	131	131	131	131	131
-- 50,000 LB --												
V_{FS} = 145 KCAS	FLD LNGTH	5,200	5,010	4,710	4,480	4,320	4,200	4,100	4,020	3,880	3,740	3,610
V_{SE} = 150 KCAS	V_1 KCAS	120	120	118	117	117	117	117	117	117	117	117
V_{REF} = 130 KCAS	V_R KCAS	126	126	125	125	124	124	124	124	124	124	124
MAX TEMP = 38°C	V_2 KCAS	131	131	131	131	131	131	131	131	131	131	131
-- 48,000 LB --												
V_{FS} = 141 KCAS	FLD LNGTH	5,000	4,820	4,530	4,320	4,190	4,100	4,010	3,940	3,800	3,670	3,540
V_{SE} = 147 KCAS	V_1 KCAS	120	119	118	117	117	117	117	117	117	117	118
V_{REF} = 128 KCAS	V_R KCAS	126	125	125	124	124	124	123	123	123	123	123
MAX TEMP = 38°C	V_2 KCAS	131	131	131	131	131	131	131	131	131	131	131
-- 46,000 LB --												
V_{FS} = 138 KCAS	FLD LNGTH	4,810	4,630	4,360	4,200	4,100	4,010	3,930	3,860	3,720	3,590	3,470
V_{SE} = 144 KCAS	V_1 KCAS	119	118	117	117	117	117	117	117	117	118	118
V_{REF} = 125 KCAS	V_R KCAS	125	125	124	124	124	123	123	123	123	123	123
MAX TEMP = 38°C	V_2 KCAS	131	131	131	131	131	131	131	131	131	131	131

CAUTION: DO NOT REDUCE TAKEOFF EPR BY MORE THAN .15 OR BELOW A MINIMUM VALUE OF 1.56.

NOTES:

HEADWIND:	Increase available field length 2% for each 5 knots (up to 40 knots).
TAILWIND:	Not permitted using this data at this pressure altitude.
UPHILL SLOPE:	Decrease available field length 20% for each 1% (up to 2%).
DOWNHILL SLOPE:	Not permitted using this data at this pressure altitude.
GROUND SPOILERS INOP:	Decrease available field length 800 feet.

GIV-SP Takeoff Planning: Flaps 20° - APA 8000 Feet

AFM APP. A

TAKEOFF PLANNING CHART

GIV-SP **AIRPORT PRESSURE ALTITUDE = 8,000 FEET** **TAKEOFF FLAP 20°**

74,600 LB MTOGW	OAT (°C)	34	30	25	20	15	10	5	0	-10	-20	-30
	OAT (°F)	93	86	77	68	59	50	41	32	14	-4	-22
	RATED EPR	1.66	1.68	1.70	1.71	1.72	1.73	1.74	1.75	1.75	1.75	1.75
-- 74,600 LB --												
V_{FS} = 179 KCAS	FLD LNGTH	******	******	******	******	******	10,130	9,770	9,370	8,950	8,630	8,310
V_{SE} = 186 KCAS	V_1 KCAS	******	******	******	******	******	150	150	149	149	149	150
V_{REF} = 161 KCAS	V_R KCAS	******	******	******	******	******	150	150	150	150	150	150
MAX TEMP = 10°C	V_2 KCAS	******	******	******	******	******	154	154	154	154	154	154
-- 74,000 LB --												
V_{FS} = 178 KCAS	FLD LNGTH	******	******	******	******	******	9,890	9,560	9,190	8,780	8,470	8,160
V_{SE} = 185 KCAS	V_1 KCAS	******	******	******	******	******	149	149	149	148	148	149
V_{REF} = 160 KCAS	V_R KCAS	******	******	******	******	******	149	149	149	149	149	149
MAX TEMP = 12°C	V_2 KCAS	******	******	******	******	******	153	153	153	153	153	153
-- 72,000 LB --												
V_{FS} = 176 KCAS	FLD LNGTH	******	******	******	******	9,670	9,240	8,960	8,640	8,260	7,970	7,670
V_{SE} = 183 KCAS	V_1 KCAS	******	******	******	******	147	146	146	146	145	145	146
V_{REF} = 158 KCAS	V_R KCAS	******	******	******	******	147	147	147	147	147	147	147
MAX TEMP = 19°C	V_2 KCAS	******	******	******	******	151	151	151	151	151	151	151
-- 70,000 LB --												
V_{FS} = 173 KCAS	FLD LNGTH	******	******	10,010	9,450	9,040	8,670	8,420	8,130	7,770	7,490	7,220
V_{SE} = 180 KCAS	V_1 KCAS	******	******	145	145	144	144	143	143	143	143	143
V_{REF} = 156 KCAS	V_R KCAS	******	******	145	145	145	145	145	145	145	145	145
MAX TEMP = 25°C	V_2 KCAS	******	******	149	149	149	149	149	149	149	149	149
-- 68,000 LB --												
V_{FS} = 171 KCAS	FLD LNGTH	******	******	9,250	8,820	8,460	8,130	7,900	7,630	7,300	7,040	6,780
V_{SE} = 178 KCAS	V_1 KCAS	******	******	143	142	141	141	140	140	140	140	140
V_{REF} = 154 KCAS	V_R KCAS	******	******	143	143	143	143	143	143	143	143	143
MAX TEMP = 29°C	V_2 KCAS	******	******	147	147	147	147	147	147	147	147	147
-- 66,000 LB --												
V_{FS} = 168 KCAS	FLD LNGTH	******	9,230	8,610	8,250	7,920	7,620	7,410	7,150	6,850	6,600	6,360
V_{SE} = 175 KCAS	V_1 KCAS	******	141	139	139	138	138	137	137	137	137	137
V_{REF} = 151 KCAS	V_R KCAS	******	141	141	141	141	141	141	141	141	141	141
MAX TEMP = 33°C	V_2 KCAS	******	145	145	145	145	145	145	145	145	145	145
-- 64,000 LB --												
V_{FS} = 166 KCAS	FLD LNGTH	9,210	8,560	8,040	7,710	7,420	7,140	6,940	6,710	6,420	6,190	5,960
V_{SE} = 172 KCAS	V_1 KCAS	138	137	136	136	135	135	134	134	134	134	134
V_{REF} = 149 KCAS	V_R KCAS	139	139	139	139	139	138	138	138	138	138	138
MAX TEMP = 34°C	V_2 KCAS	143	143	143	143	143	143	143	143	143	143	143
-- 62,000 LB --												
V_{FS} = 163 KCAS	FLD LNGTH	8,460	7,960	7,510	7,210	6,940	6,680	6,510	6,290	6,030	5,810	5,600
V_{SE} = 169 KCAS	V_1 KCAS	136	135	133	133	132	132	131	131	131	131	131
V_{REF} = 147 KCAS	V_R KCAS	136	136	136	136	136	136	136	136	136	136	136
MAX TEMP = 34°C	V_2 KCAS	140	140	140	140	140	140	140	140	140	140	140

CAUTION: DO NOT REDUCE TAKEOFF EPR BY MORE THAN .15 OR BELOW A MINIMUM VALUE OF 1.56.

NOTES:

HEADWIND:	Increase available field length 2% for each 5 knots (up to 40 knots).
TAILWIND:	Not permitted using this data at this pressure altitude.
UPHILL SLOPE:	Decrease available field length 20% for each 1% (up to 2%).
DOWNHILL SLOPE:	Not permitted using this data at this pressure altitude.
GROUND SPOILERS INOP:	Decrease available field length 800 feet.

GIV-SP Takeoff Planning: Flaps 20° - APA 8000 Feet, ctd…

AFM APP. A

TAKEOFF PLANNING CHART

GIV-SP **AIRPORT PRESSURE ALTITUDE = 8,000 FEET** **TAKEOFF FLAP 20°**

74,600 LB MTOGW	OAT (°C)	34	30	25	20	15	10	5	0	-10	-20	-30
	OAT (°F)	93	86	77	68	59	50	41	32	14	-4	-22
	RATED EPR	1.66	1.68	1.70	1.71	1.72	1.73	1.74	1.75	1.75	1.75	1.75
-- 60,000 LB --												
V_{FS} = 160 KCAS	FLD LNGTH	7,860	7,420	7,010	6,730	6,480	6,250	6,090	5,900	5,650	5,450	5,250
V_{SE} = 167 KCAS	V_1 KCAS	133	131	130	130	129	129	128	128	128	128	128
V_{REF} = 144 KCAS	V_R KCAS	134	134	134	134	134	134	134	134	133	133	133
MAX TEMP = 34°C	V_2 KCAS	138	138	138	138	138	138	138	138	138	138	138
-- 58,000 LB --												
V_{FS} = 158 KCAS	FLD LNGTH	7,290	6,890	6,530	6,270	6,050	5,830	5,690	5,510	5,280	5,090	4,900
V_{SE} = 164 KCAS	V_1 KCAS	129	128	127	127	126	126	125	125	125	125	125
V_{REF} = 142 KCAS	V_R KCAS	132	132	132	131	131	131	131	131	131	131	131
MAX TEMP = 34°C	V_2 KCAS	136	136	136	136	136	136	136	136	136	136	136
-- 56,000 LB --												
V_{FS} = 155 KCAS	FLD LNGTH	6,750	6,390	6,070	5,840	5,640	5,440	5,300	5,140	4,920	4,750	4,580
V_{SE} = 161 KCAS	V_1 KCAS	126	125	124	124	123	122	122	122	122	122	122
V_{REF} = 139 KCAS	V_R KCAS	129	129	129	129	129	128	128	128	128	128	128
MAX TEMP = 34°C	V_2 KCAS	133	133	133	133	133	133	133	133	133	133	133
-- 54,000 LB --												
V_{FS} = 152 KCAS	FLD LNGTH	6,350	6,020	5,730	5,520	5,330	5,140	5,010	4,860	4,660	4,490	4,330
V_{SE} = 158 KCAS	V_1 KCAS	124	123	122	121	121	120	120	120	120	120	120
V_{REF} = 137 KCAS	V_R KCAS	128	128	127	127	127	127	126	126	126	126	126
MAX TEMP = 34°C	V_2 KCAS	132	132	132	132	132	132	132	132	132	132	132
-- 52,000 LB --												
V_{FS} = 149 KCAS	FLD LNGTH	6,070	5,770	5,490	5,290	5,110	4,930	4,810	4,660	4,470	4,310	4,150
V_{SE} = 155 KCAS	V_1 KCAS	123	122	121	120	120	119	119	119	119	119	119
V_{REF} = 134 KCAS	V_R KCAS	127	127	127	126	126	126	126	125	125	125	125
MAX TEMP = 34°C	V_2 KCAS	131	131	131	131	131	131	131	131	131	131	131
-- 50,000 LB --												
V_{FS} = 146 KCAS	FLD LNGTH	5,800	5,520	5,250	5,060	4,890	4,720	4,600	4,460	4,280	4,120	3,970
V_{SE} = 152 KCAS	V_1 KCAS	121	121	120	119	119	118	118	117	117	117	118
V_{REF} = 132 KCAS	V_R KCAS	127	126	126	125	125	125	125	125	124	124	124
MAX TEMP = 34°C	V_2 KCAS	131	131	131	131	131	131	131	131	131	131	131
-- 48,000 LB --												
V_{FS} = 143 KCAS	FLD LNGTH	5,570	5,300	5,050	4,870	4,700	4,540	4,430	4,290	4,120	3,970	3,830
V_{SE} = 149 KCAS	V_1 KCAS	121	120	119	118	118	117	117	117	117	117	117
V_{REF} = 129 KCAS	V_R KCAS	126	126	125	125	125	125	124	124	124	124	124
MAX TEMP = 34°C	V_2 KCAS	131	131	131	131	131	131	131	131	131	131	131
-- 46,000 LB --												
V_{FS} = 140 KCAS	FLD LNGTH	5,350	5,090	4,850	4,680	4,520	4,370	4,280	4,180	4,030	3,890	3,750
V_{SE} = 146 KCAS	V_1 KCAS	120	119	118	117	117	116	116	117	117	117	117
V_{REF} = 126 KCAS	V_R KCAS	126	125	125	125	124	124	124	124	124	124	124
MAX TEMP = 34°C	V_2 KCAS	131	131	131	131	131	131	131	131	131	131	131

CAUTION: DO NOT REDUCE TAKEOFF EPR BY MORE THAN .15 OR BELOW A MINIMUM VALUE OF 1.56.

NOTES:

HEADWIND: Increase available field length 2% for each 5 knots (up to 40 knots).
TAILWIND: Not permitted using this data at this pressure altitude.
UPHILL SLOPE: Decrease available field length 20% for each 1% (up to 2%).
DOWNHILL SLOPE: Not permitted using this data at this pressure altitude.
GROUND SPOILERS INOP: Decrease available field length 800 feet.

GIV-SP Takeoff Planning Charts: Flaps 10° AFM APP. A

The charts in this section provide quick reference planning data for takeoff planning at the following Airport Pressure Altitudes (APA), for 10° flap configurations:

- Sea Level
- 500 Feet
- 1000 Feet
- 2000 Feet
- 4000 Feet
- 6000 Feet
- 8000 Feet

These charts are for use for airplanes SN 1214 and subsequent and SN 1000 thru 1213 with ASC 190 incorporated.

In the interest of safety, the ***CAUTION*** and ***NOTES*** following each takeoff planning chart must be observed when using any takeoff planning chart in this section.

GIV-SP Takeoff Planning: Flaps 10° - APA Sea Level

AFM APP. A

TAKEOFF PLANNING CHART

GIV-SP **AIRPORT PRESSURE ALTITUDE = SEA LEVEL** **TAKEOFF FLAP 10°**

74,600 LB MTOGW	OAT (°C)	50	45	40	35	30	25	20	15	5	-5	-15
	OAT (°F)	122	113	104	95	86	77	68	59	41	23	5
	RATED EPR	1.59	1.62	1.64	1.67	1.70	1.70	1.70	1.70	1.69	1.69	1.69
-- 74,600 LB --												
V_{FS} = 173 KCAS	FLD LNGTH	8,190	7,570	7,050	6,580	6,170	6,070	5,980	5,880	5,740	5,540	5,350
V_{SE} = 180 KCAS	V_1 KCAS	151	149	147	146	144	144	144	144	145	145	145
V_{REF} = 158 KCAS	V_R KCAS	152	151	151	151	150	150	150	150	150	150	150
MAX TEMP = 50°C	V_2 KCAS	157	157	157	157	157	157	157	157	157	157	157
-- 74,000 LB --												
V_{FS} = 172 KCAS	FLD LNGTH	8,040	7,440	6,930	6,470	6,070	5,970	5,880	5,790	5,640	5,450	5,260
V_{SE} = 179 KCAS	V_1 KCAS	150	148	146	145	144	144	144	144	144	144	144
V_{REF} = 158 KCAS	V_R KCAS	151	151	150	150	150	150	150	150	150	150	150
MAX TEMP = 50°C	V_2 KCAS	156	156	156	156	156	156	156	156	156	156	156
-- 72,000 LB --												
V_{FS} = 170 KCAS	FLD LNGTH	7,580	7,030	6,550	6,120	5,750	5,660	5,570	5,480	5,340	5,160	4,990
V_{SE} = 177 KCAS	V_1 KCAS	147	145	144	142	141	141	141	141	141	141	141
V_{REF} = 156 KCAS	V_R KCAS	149	149	148	148	147	147	147	147	147	147	147
MAX TEMP = 50°C	V_2 KCAS	154	154	154	154	154	154	154	154	154	154	154
-- 70,000 LB --												
V_{FS} = 167 KCAS	FLD LNGTH	7,140	6,630	6,190	5,790	5,440	5,350	5,270	5,180	5,060	4,890	4,720
V_{SE} = 174 KCAS	V_1 KCAS	144	143	141	139	138	138	138	138	138	138	139
V_{REF} = 154 KCAS	V_R KCAS	147	146	146	145	145	145	145	145	145	145	145
MAX TEMP = 50°C	V_2 KCAS	152	152	152	152	152	152	152	152	152	152	152
-- 68,000 LB --												
V_{FS} = 165 KCAS	FLD LNGTH	6,710	6,240	5,830	5,460	5,130	5,050	4,970	4,890	4,770	4,610	4,450
V_{SE} = 171 KCAS	V_1 KCAS	141	140	138	137	135	135	135	135	136	136	136
V_{REF} = 151 KCAS	V_R KCAS	144	144	143	143	143	143	143	143	143	143	143
MAX TEMP = 50°C	V_2 KCAS	149	149	149	149	149	149	149	149	149	149	149
-- 66,000 LB --												
V_{FS} = 162 KCAS	FLD LNGTH	6,310	5,870	5,490	5,140	4,840	4,760	4,690	4,610	4,500	4,350	4,200
V_{SE} = 169 KCAS	V_1 KCAS	138	137	135	134	132	132	132	132	133	133	133
V_{REF} = 149 KCAS	V_R KCAS	142	141	141	141	140	140	140	140	140	140	140
MAX TEMP = 50°C	V_2 KCAS	147	147	147	147	147	147	147	147	147	147	147
-- 64,000 LB --												
V_{FS} = 160 KCAS	FLD LNGTH	5,920	5,510	5,160	4,840	4,560	4,480	4,410	4,340	4,240	4,090	3,950
V_{SE} = 166 KCAS	V_1 KCAS	135	134	132	131	129	129	129	129	130	130	130
V_{REF} = 147 KCAS	V_R KCAS	139	139	139	138	138	138	138	138	138	138	138
MAX TEMP = 50°C	V_2 KCAS	145	145	145	145	145	145	145	145	145	145	145
-- 62,000 LB --												
V_{FS} = 157 KCAS	FLD LNGTH	5,550	5,180	4,850	4,550	4,290	4,220	4,150	4,090	3,990	3,850	3,720
V_{SE} = 164 KCAS	V_1 KCAS	132	131	129	128	126	126	126	126	127	127	127
V_{REF} = 144 KCAS	V_R KCAS	137	137	136	136	135	135	135	135	135	135	135
MAX TEMP = 50°C	V_2 KCAS	143	143	143	143	143	143	143	143	143	143	143

CAUTION: DO NOT REDUCE TAKEOFF EPR BY MORE THAN .15 OR BELOW A MINIMUM VALUE OF 1.56.

NOTES:

HEADWIND: Increase available field length 2% for each 5 knots (up to 40 knots).
TAILWIND: Decrease available field length 11% for each 5 knots (up to 10 knots).
UPHILL SLOPE: Decrease available field length 20% for each 1% (up to 2%).
DOWNHILL SLOPE: No adjustments required (up to 2%).

GIV-SP Takeoff Planning: Flaps 10° - APA Sea Level, ctd…

AFM APP. A

TAKEOFF PLANNING CHART

GIV-SP **AIRPORT PRESSURE ALTITUDE = SEA LEVEL** **TAKEOFF FLAP 10°**

74,600 LB MTOGW	OAT (°C)	50	45	40	35	30	25	20	15	5	-5	-15
	OAT (°F)	122	113	104	95	86	77	68	59	41	23	5
	RATED EPR	1.59	1.62	1.64	1.67	1.70	1.70	1.70	1.70	1.69	1.69	1.69
-- 60,000 LB --												
V_{FS} = 155 KCAS	FLD LNGTH	5,200	4,850	4,550	4,270	4,030	3,970	3,900	3,840	3,750	3,620	3,500
V_{SE} = 161 KCAS	V_1 KCAS	129	128	126	125	123	123	123	123	124	124	124
V_{REF} = 142 KCAS	V_R KCAS	135	134	134	133	133	133	133	133	133	133	133
MAX TEMP = 50°C	V_2 KCAS	140	140	140	140	140	140	140	140	140	140	140
-- 58,000 LB --												
V_{FS} = 152 KCAS	FLD LNGTH	4,850	4,530	4,250	4,000	3,770	3,710	3,660	3,600	3,510	3,390	3,270
V_{SE} = 158 KCAS	V_1 KCAS	126	125	123	122	120	120	120	120	120	120	121
V_{REF} = 140 KCAS	V_R KCAS	132	132	131	131	130	130	130	130	130	130	130
MAX TEMP = 50°C	V_2 KCAS	138	138	138	138	138	138	138	138	138	138	138
-- 56,000 LB --												
V_{FS} = 150 KCAS	FLD LNGTH	4,520	4,230	3,970	3,740	3,570	3,520	3,470	3,410	3,320	3,210	3,100
V_{SE} = 156 KCAS	V_1 KCAS	123	121	120	118	118	118	118	118	118	118	118
V_{REF} = 137 KCAS	V_R KCAS	129	129	128	128	127	127	127	127	127	127	127
MAX TEMP = 50°C	V_2 KCAS	136	136	136	136	136	136	136	136	136	136	136
-- 54,000 LB --												
V_{FS} = 147 KCAS	FLD LNGTH	4,240	3,970	3,740	3,620	3,520	3,460	3,410	3,360	3,260	3,160	3,050
V_{SE} = 153 KCAS	V_1 KCAS	120	119	117	117	118	118	118	118	118	118	118
V_{REF} = 135 KCAS	V_R KCAS	127	127	126	126	125	125	125	125	125	125	125
MAX TEMP = 50°C	V_2 KCAS	134	134	134	134	134	134	134	134	134	134	134
-- 52,000 LB --												
V_{FS} = 144 KCAS	FLD LNGTH	4,010	3,780	3,660	3,560	3,460	3,410	3,360	3,310	3,210	3,110	3,010
V_{SE} = 150 KCAS	V_1 KCAS	118	117	117	118	118	118	118	118	118	119	119
V_{REF} = 132 KCAS	V_R KCAS	126	125	125	124	124	124	124	124	124	124	124
MAX TEMP = 50°C	V_2 KCAS	132	132	132	132	132	132	132	132	132	132	132
-- 50,000 LB --												
V_{FS} = 142 KCAS	FLD LNGTH	3,830	3,710	3,600	3,490	3,400	3,350	3,300	3,250	3,160	3,060	2,960
V_{SE} = 147 KCAS	V_1 KCAS	117	117	118	118	119	119	119	119	119	119	119
V_{REF} = 130 KCAS	V_R KCAS	124	124	123	123	122	122	122	122	122	122	122
MAX TEMP = 50°C	V_2 KCAS	131	131	131	131	131	131	131	131	131	131	131
-- 48,000 LB --												
V_{FS} = 139 KCAS	FLD LNGTH	3,760	3,640	3,530	3,430	3,340	3,290	3,250	3,200	3,100	3,010	2,910
V_{SE} = 144 KCAS	V_1 KCAS	117	117	118	118	119	119	119	119	119	119	119
V_{REF} = 127 KCAS	V_R KCAS	124	123	123	122	122	122	122	122	122	122	122
MAX TEMP = 50°C	V_2 KCAS	131	131	131	131	131	131	131	131	131	131	131
-- 46,000 LB --												
V_{FS} = 136 KCAS	FLD LNGTH	3,680	3,570	3,470	3,370	3,280	3,240	3,190	3,140	3,050	2,950	2,860
V_{SE} = 141 KCAS	V_1 KCAS	117	118	118	119	119	119	119	119	119	120	120
V_{REF} = 124 KCAS	V_R KCAS	124	123	123	122	121	121	121	121	121	121	121
MAX TEMP = 50°C	V_2 KCAS	131	131	131	131	131	131	131	131	131	131	131

CAUTION: DO NOT REDUCE TAKEOFF EPR BY MORE THAN .15 OR BELOW A MINIMUM VALUE OF 1.56.

NOTES:

HEADWIND: Increase available field length 2% for each 5 knots (up to 40 knots).
TAILWIND: Decrease available field length 11% for each 5 knots (up to 10 knots).
UPHILL SLOPE: Decrease available field length 20% for each 1% (up to 2%).
DOWNHILL SLOPE: No adjustments required (up to 2%).

GIV-SP Takeoff Planning: Flaps 10° - APA 500 Feet

AFM APP. A

TAKEOFF PLANNING CHART

GIV-SP **AIRPORT PRESSURE ALTITUDE = 500 FEET** **TAKEOFF FLAP 10°**

74,600 LB MTOGW	OAT (°C)	49	45	40	35	30	25	20	15	5	-5	-15
	OAT (°F)	120	113	104	95	86	77	68	59	41	23	5
	RATED EPR	1.59	1.62	1.64	1.67	1.70	1.71	1.71	1.71	1.70	1.70	1.70
-- 74,600 LB --												
V_{FS} = 173 KCAS	FLD LNGTH	8,400	7,900	7,340	6,840	6,410	6,230	6,120	6,020	5,880	5,680	5,480
V_{SE} = 180 KCAS	V_1 KCAS	151	150	148	146	145	145	145	145	145	145	145
V_{REF} = 158 KCAS	V_R KCAS	152	152	151	151	150	150	150	150	150	150	150
MAX TEMP = 49°C	V_2 KCAS	157	157	157	157	157	157	157	157	157	157	157
-- 74,000 LB --												
V_{FS} = 172 KCAS	FLD LNGTH	8,250	7,760	7,220	6,730	6,310	6,130	6,020	5,930	5,780	5,590	5,390
V_{SE} = 179 KCAS	V_1 KCAS	150	149	147	145	144	144	144	144	144	144	144
V_{REF} = 158 KCAS	V_R KCAS	151	151	151	150	150	150	150	150	150	150	150
MAX TEMP = 49°C	V_2 KCAS	156	156	156	156	156	156	156	156	156	156	156
-- 72,000 LB --												
V_{FS} = 170 KCAS	FLD LNGTH	7,780	7,320	6,820	6,370	5,970	5,800	5,700	5,610	5,480	5,290	5,110
V_{SE} = 177 KCAS	V_1 KCAS	147	146	144	143	141	141	141	141	141	141	141
V_{REF} = 156 KCAS	V_R KCAS	149	149	148	148	147	147	147	147	147	147	147
MAX TEMP = 49°C	V_2 KCAS	154	154	154	154	154	154	154	154	154	154	154
-- 70,000 LB --												
V_{FS} = 167 KCAS	FLD LNGTH	7,320	6,910	6,440	6,020	5,650	5,490	5,400	5,310	5,180	5,010	4,830
V_{SE} = 174 KCAS	V_1 KCAS	144	143	142	140	138	138	138	138	139	139	139
V_{REF} = 154 KCAS	V_R KCAS	147	146	146	146	145	145	145	145	145	145	145
MAX TEMP = 49°C	V_2 KCAS	152	152	152	152	152	152	152	152	152	152	152
-- 68,000 LB --												
V_{FS} = 165 KCAS	FLD LNGTH	6,880	6,500	6,060	5,670	5,330	5,180	5,090	5,010	4,890	4,720	4,560
V_{SE} = 172 KCAS	V_1 KCAS	141	140	139	137	136	135	135	135	136	136	136
V_{REF} = 151 KCAS	V_R KCAS	144	144	144	143	143	143	143	143	143	143	143
MAX TEMP = 49°C	V_2 KCAS	149	149	149	149	149	149	149	149	149	149	149
-- 66,000 LB --												
V_{FS} = 162 KCAS	FLD LNGTH	6,460	6,110	5,700	5,340	5,020	4,880	4,800	4,720	4,610	4,450	4,300
V_{SE} = 169 KCAS	V_1 KCAS	138	137	136	134	133	132	132	132	133	133	133
V_{REF} = 149 KCAS	V_R KCAS	142	142	141	141	140	140	140	140	140	140	140
MAX TEMP = 49°C	V_2 KCAS	147	147	147	147	147	147	147	147	147	147	147
-- 64,000 LB --												
V_{FS} = 160 KCAS	FLD LNGTH	6,060	5,730	5,360	5,030	4,730	4,600	4,520	4,450	4,340	4,190	4,050
V_{SE} = 166 KCAS	V_1 KCAS	136	134	133	131	130	129	129	129	130	130	130
V_{REF} = 147 KCAS	V_R KCAS	140	139	139	138	138	138	138	138	138	138	138
MAX TEMP = 49°C	V_2 KCAS	145	145	145	145	145	145	145	145	145	145	145
-- 62,000 LB --												
V_{FS} = 157 KCAS	FLD LNGTH	5,680	5,380	5,040	4,720	4,450	4,320	4,250	4,190	4,080	3,950	3,810
V_{SE} = 164 KCAS	V_1 KCAS	133	131	130	128	127	126	126	126	127	127	127
V_{REF} = 144 KCAS	V_R KCAS	137	137	136	136	135	135	135	135	135	135	135
MAX TEMP = 49°C	V_2 KCAS	143	143	143	143	143	143	143	143	143	143	143

CAUTION: DO NOT REDUCE TAKEOFF EPR BY MORE THAN .15 OR BELOW A MINIMUM VALUE OF 1.56.

NOTES:

HEADWIND: Increase available field length 2% for each 5 knots (up to 40 knots).

TAILWIND: Decrease available field length 11% for each 5 knots (up to 10 knots).

UPHILL SLOPE: Decrease available field length 20% for each 1% (up to 2%).

DOWNHILL SLOPE: No adjustments required (up to 2%).

GIV-SP Takeoff Planning: Flaps 10° - APA 500 Feet, ctd…

AFM APP. A

TAKEOFF PLANNING CHART

GIV-SP **AIRPORT PRESSURE ALTITUDE = 500 FEET** **TAKEOFF FLAP 10°**

74,600 LB MTOGW	OAT (°C)	49	45	40	35	30	25	20	15	5	-5	-15
	OAT (°F)	120	113	104	95	86	77	68	59	41	23	5
	RATED EPR	1.59	1.62	1.64	1.67	1.70	1.71	1.71	1.71	1.70	1.70	1.70
-- 60,000 LB --												
V_{FS} = 155 KCAS	FLD LNGTH	5,320	5,040	4,720	4,440	4,180	4,060	4,000	3,930	3,840	3,710	3,580
V_{SE} = 161 KCAS	V_1 KCAS	130	128	127	125	124	123	123	123	124	124	124
V_{REF} = 142 KCAS	V_R KCAS	135	134	134	133	133	133	133	133	133	133	133
MAX TEMP = 49°C	V_2 KCAS	140	140	140	140	140	140	140	140	140	140	140
-- 58,000 LB --												
V_{FS} = 152 KCAS	FLD LNGTH	4,970	4,710	4,420	4,150	3,910	3,810	3,740	3,680	3,590	3,470	3,350
V_{SE} = 158 KCAS	V_1 KCAS	126	125	124	122	121	120	120	120	121	121	121
V_{REF} = 140 KCAS	V_R KCAS	132	132	131	131	130	130	130	130	130	130	130
MAX TEMP = 49°C	V_2 KCAS	138	138	138	138	138	138	138	138	138	138	138
-- 56,000 LB --												
V_{FS} = 150 KCAS	FLD LNGTH	4,630	4,390	4,120	3,880	3,670	3,590	3,530	3,480	3,380	3,270	3,160
V_{SE} = 156 KCAS	V_1 KCAS	123	122	120	119	118	118	118	118	118	118	118
V_{REF} = 137 KCAS	V_R KCAS	129	129	129	128	128	127	127	127	127	127	127
MAX TEMP = 49°C	V_2 KCAS	136	136	136	136	136	136	136	136	136	136	136
-- 54,000 LB --												
V_{FS} = 147 KCAS	FLD LNGTH	4,340	4,130	3,880	3,710	3,600	3,530	3,480	3,420	3,330	3,220	3,110
V_{SE} = 153 KCAS	V_1 KCAS	121	119	118	117	118	118	118	118	118	118	118
V_{REF} = 135 KCAS	V_R KCAS	127	127	126	126	125	125	125	125	125	125	125
MAX TEMP = 49°C	V_2 KCAS	134	134	134	134	134	134	134	134	134	134	134
-- 52,000 LB --												
V_{FS} = 144 KCAS	FLD LNGTH	4,110	3,900	3,750	3,640	3,540	3,470	3,420	3,370	3,270	3,170	3,060
V_{SE} = 150 KCAS	V_1 KCAS	118	117	117	118	118	118	118	118	118	118	119
V_{REF} = 132 KCAS	V_R KCAS	126	125	125	124	124	124	124	124	124	124	124
MAX TEMP = 49°C	V_2 KCAS	132	132	132	132	132	132	132	132	132	132	132
-- 50,000 LB --												
V_{FS} = 142 KCAS	FLD LNGTH	3,900	3,800	3,680	3,580	3,480	3,410	3,360	3,310	3,220	3,110	3,010
V_{SE} = 147 KCAS	V_1 KCAS	116	117	117	118	118	118	118	119	119	119	119
V_{REF} = 130 KCAS	V_R KCAS	124	124	123	123	122	122	122	122	122	122	122
MAX TEMP = 49°C	V_2 KCAS	131	131	131	131	131	131	131	131	131	131	131
-- 48,000 LB --												
V_{FS} = 139 KCAS	FLD LNGTH	3,820	3,730	3,620	3,510	3,420	3,360	3,310	3,260	3,160	3,060	2,960
V_{SE} = 144 KCAS	V_1 KCAS	117	117	118	118	118	119	119	119	119	119	119
V_{REF} = 127 KCAS	V_R KCAS	124	124	123	123	122	122	122	122	122	122	122
MAX TEMP = 49°C	V_2 KCAS	131	131	131	131	131	131	131	131	131	131	131
-- 46,000 LB --												
V_{FS} = 136 KCAS	FLD LNGTH	3,740	3,650	3,550	3,450	3,360	3,300	3,250	3,200	3,110	3,010	2,910
V_{SE} = 141 KCAS	V_1 KCAS	117	117	118	118	119	119	119	119	119	119	119
V_{REF} = 124 KCAS	V_R KCAS	124	123	123	122	122	122	122	122	122	122	122
MAX TEMP = 49°C	V_2 KCAS	131	131	131	131	131	131	131	131	131	131	131

CAUTION: DO NOT REDUCE TAKEOFF EPR BY MORE THAN .15 OR BELOW A MINIMUM VALUE OF 1.56.

NOTES:

HEADWIND: Increase available field length 2% for each 5 knots (up to 40 knots).

TAILWIND: Decrease available field length 11% for each 5 knots (up to 10 knots).

UPHILL SLOPE: Decrease available field length 20% for each 1% (up to 2%).

DOWNHILL SLOPE: No adjustments required (up to 2%).

GIV-SP Takeoff Planning: Flaps 10° - APA 1000 Feet

AFM APP. A

TAKEOFF PLANNING CHART

GIV-SP **AIRPORT PRESSURE ALTITUDE = 1,000 FEET** **TAKEOFF FLAP 10°**

74,600 LB MTOGW	OAT (°C)	48	45	40	35	30	25	20	15	5	-5	-15
	OAT (°F)	118	113	104	95	86	77	68	59	41	23	5
	RATED EPR	1.60	1.62	1.64	1.66	1.70	1.71	1.71	1.71	1.71	1.71	1.71
-- 74,600 LB --												
V_{FS} = 173 KCAS	FLD LNGTH	8,620	8,230	7,640	7,120	6,670	6,400	6,280	6,180	6,030	5,820	5,620
V_{SE} = 180 KCAS	V_1 KCAS	151	150	148	147	146	145	145	145	145	145	145
V_{REF} = 158 KCAS	V_R KCAS	152	152	151	151	151	150	150	150	150	150	150
MAX TEMP = 48°C	V_2 KCAS	157	157	157	157	157	157	157	157	157	157	157
-- 74,000 LB --												
V_{FS} = 172 KCAS	FLD LNGTH	8,470	8,090	7,510	7,010	6,560	6,300	6,170	6,080	5,930	5,730	5,530
V_{SE} = 179 KCAS	V_1 KCAS	150	149	148	146	145	144	144	144	144	144	144
V_{REF} = 158 KCAS	V_R KCAS	151	151	151	150	150	150	150	150	150	150	150
MAX TEMP = 48°C	V_2 KCAS	156	156	156	156	156	156	156	156	156	156	156
-- 72,000 LB --												
V_{FS} = 170 KCAS	FLD LNGTH	7,970	7,630	7,100	6,620	6,210	5,960	5,850	5,750	5,610	5,420	5,230
V_{SE} = 177 KCAS	V_1 KCAS	147	146	145	143	142	141	141	141	141	142	142
V_{REF} = 156 KCAS	V_R KCAS	149	149	148	148	148	147	147	147	147	147	147
MAX TEMP = 48°C	V_2 KCAS	154	154	154	154	154	154	154	154	154	154	154
-- 70,000 LB --												
V_{FS} = 167 KCAS	FLD LNGTH	7,510	7,190	6,700	6,260	5,870	5,640	5,530	5,440	5,310	5,130	4,950
V_{SE} = 174 KCAS	V_1 KCAS	144	144	142	141	139	138	138	138	139	139	139
V_{REF} = 154 KCAS	V_R KCAS	147	147	146	146	145	145	145	145	145	145	145
MAX TEMP = 48°C	V_2 KCAS	152	152	152	152	152	152	152	152	152	152	152
-- 68,000 LB --												
V_{FS} = 165 KCAS	FLD LNGTH	7,050	6,760	6,300	5,890	5,530	5,320	5,220	5,130	5,010	4,840	4,670
V_{SE} = 172 KCAS	V_1 KCAS	142	141	139	138	136	136	136	136	136	136	136
V_{REF} = 151 KCAS	V_R KCAS	144	144	144	143	143	143	143	143	143	143	143
MAX TEMP = 48°C	V_2 KCAS	149	149	149	149	149	149	149	149	149	149	149
-- 66,000 LB --												
V_{FS} = 162 KCAS	FLD LNGTH	6,620	6,350	5,930	5,550	5,210	5,010	4,920	4,840	4,720	4,560	4,400
V_{SE} = 169 KCAS	V_1 KCAS	139	138	136	135	133	133	133	133	133	133	133
V_{REF} = 149 KCAS	V_R KCAS	142	142	141	141	140	140	140	140	140	140	140
MAX TEMP = 48°C	V_2 KCAS	147	147	147	147	147	147	147	147	147	147	147
-- 64,000 LB --												
V_{FS} = 160 KCAS	FLD LNGTH	6,210	5,960	5,570	5,220	4,910	4,720	4,630	4,560	4,440	4,300	4,150
V_{SE} = 166 KCAS	V_1 KCAS	136	135	133	132	130	130	130	130	130	130	130
V_{REF} = 147 KCAS	V_R KCAS	140	139	139	138	138	138	138	138	138	138	138
MAX TEMP = 48°C	V_2 KCAS	145	145	145	145	145	145	145	145	145	145	145
-- 62,000 LB --												
V_{FS} = 157 KCAS	FLD LNGTH	5,820	5,590	5,230	4,910	4,610	4,440	4,360	4,290	4,180	4,040	3,900
V_{SE} = 164 KCAS	V_1 KCAS	133	132	130	129	127	127	127	127	127	127	127
V_{REF} = 144 KCAS	V_R KCAS	137	137	136	136	136	135	135	135	135	135	135
MAX TEMP = 48°C	V_2 KCAS	143	143	143	143	143	143	143	143	143	143	143

CAUTION: DO NOT REDUCE TAKEOFF EPR BY MORE THAN .15 OR BELOW A MINIMUM VALUE OF 1.56.

NOTES:

HEADWIND:	Increase available field length 2% for each 5 knots (up to 40 knots).
TAILWIND:	Decrease available field length 11% for each 5 knots (up to 10 knots).
UPHILL SLOPE:	Decrease available field length 20% for each 1% (up to 2%).
DOWNHILL SLOPE:	No adjustments required (up to 2%).

GIV-SP Takeoff Planning: Flaps 10° - APA 1000 Feet, ctd…

AFM APP. A

TAKEOFF PLANNING CHART

GIV-SP **AIRPORT PRESSURE ALTITUDE = 1,000 FEET** **TAKEOFF FLAP 10°**

74,600 LB MTOGW	OAT (°C)	48	45	40	35	30	25	20	15	5	-5	-15
	OAT (°F)	118	113	104	95	86	77	68	59	41	23	5
	RATED EPR	1.60	1.62	1.64	1.66	1.70	1.71	1.71	1.71	1.71	1.71	1.71
-- 60,000 LB --												
V_{FS} = 155 KCAS	FLD LNGTH	5,450	5,240	4,910	4,600	4,340	4,170	4,090	4,030	3,930	3,800	3,670
V_{SE} = 161 KCAS	V_1 KCAS	130	129	127	126	124	124	124	124	124	124	124
V_{REF} = 142 KCAS	V_R KCAS	135	134	134	134	133	133	133	133	133	133	133
MAX TEMP = 48°C	V_2 KCAS	140	140	140	140	140	140	140	140	140	140	140
-- 58,000 LB --												
V_{FS} = 152 KCAS	FLD LNGTH	5,090	4,890	4,580	4,310	4,060	3,910	3,830	3,770	3,680	3,560	3,430
V_{SE} = 158 KCAS	V_1 KCAS	127	126	124	123	121	120	120	120	121	121	121
V_{REF} = 140 KCAS	V_R KCAS	132	132	131	131	130	130	130	130	130	130	130
MAX TEMP = 48°C	V_2 KCAS	138	138	138	138	138	138	138	138	138	138	138
-- 56,000 LB --												
V_{FS} = 150 KCAS	FLD LNGTH	4,740	4,560	4,280	4,020	3,790	3,660	3,600	3,550	3,450	3,330	3,220
V_{SE} = 156 KCAS	V_1 KCAS	123	122	121	120	118	117	118	118	118	118	118
V_{REF} = 137 KCAS	V_R KCAS	129	129	129	128	128	128	127	127	127	127	127
MAX TEMP = 48°C	V_2 KCAS	136	136	136	136	136	136	136	136	136	136	136
-- 54,000 LB --												
V_{FS} = 147 KCAS	FLD LNGTH	4,450	4,280	4,020	3,820	3,680	3,600	3,540	3,490	3,390	3,280	3,170
V_{SE} = 153 KCAS	V_1 KCAS	121	120	118	117	117	118	118	118	118	118	118
V_{REF} = 135 KCAS	V_R KCAS	127	127	127	126	126	125	125	125	125	125	125
MAX TEMP = 48°C	V_2 KCAS	134	134	134	134	134	134	134	134	134	134	134
-- 52,000 LB --												
V_{FS} = 144 KCAS	FLD LNGTH	4,210	4,050	3,860	3,730	3,620	3,540	3,490	3,430	3,330	3,230	3,120
V_{SE} = 150 KCAS	V_1 KCAS	119	118	117	117	118	118	118	118	118	118	119
V_{REF} = 132 KCAS	V_R KCAS	126	126	125	125	124	124	124	124	124	124	124
MAX TEMP = 48°C	V_2 KCAS	132	132	132	132	132	132	132	132	132	132	132
-- 50,000 LB --												
V_{FS} = 142 KCAS	FLD LNGTH	3,980	3,900	3,770	3,660	3,560	3,480	3,430	3,370	3,280	3,170	3,070
V_{SE} = 147 KCAS	V_1 KCAS	116	117	117	118	118	118	118	118	119	119	119
V_{REF} = 130 KCAS	V_R KCAS	124	124	124	123	123	122	122	122	122	122	122
MAX TEMP = 48°C	V_2 KCAS	131	131	131	131	131	131	131	131	131	131	131
-- 48,000 LB --												
V_{FS} = 139 KCAS	FLD LNGTH	3,890	3,820	3,700	3,590	3,500	3,420	3,370	3,320	3,220	3,120	3,020
V_{SE} = 144 KCAS	V_1 KCAS	117	117	117	118	118	119	119	119	119	119	119
V_{REF} = 127 KCAS	V_R KCAS	124	124	123	123	122	122	122	122	122	122	122
MAX TEMP = 48°C	V_2 KCAS	131	131	131	131	131	131	131	131	131	131	131
-- 46,000 LB --												
V_{FS} = 136 KCAS	FLD LNGTH	3,810	3,740	3,630	3,530	3,430	3,360	3,310	3,260	3,170	3,070	2,960
V_{SE} = 141 KCAS	V_1 KCAS	117	117	118	118	119	119	119	119	119	119	120
V_{REF} = 124 KCAS	V_R KCAS	124	124	123	122	122	122	122	122	122	122	122
MAX TEMP = 48°C	V_2 KCAS	131	131	131	131	131	131	131	131	131	131	131

CAUTION: DO NOT REDUCE TAKEOFF EPR BY MORE THAN .15 OR BELOW A MINIMUM VALUE OF 1.56.

NOTES:

HEADWIND: Increase available field length 2% for each 5 knots (up to 40 knots).
TAILWIND: Decrease available field length 11% for each 5 knots (up to 10 knots).
UPHILL SLOPE: Decrease available field length 20% for each 1% (up to 2%).
DOWNHILL SLOPE: No adjustments required (up to 2%).

GIV-SP Takeoff Planning: Flaps 10° - APA 2000 Feet

AFM APP. A

TAKEOFF PLANNING CHART

GIV-SP **AIRPORT PRESSURE ALTITUDE = 2,000 FEET** **TAKEOFF FLAP 10°**

74,600 LB MTOGW	OAT (°C)	45	40	35	30	25	20	15	10	0	-10	-19
	OAT (°F)	113	104	95	86	77	68	59	50	32	14	-2
	RATED EPR	1.62	1.64	1.66	1.69	1.71	1.72	1.72	1.72	1.72	1.72	1.72
-- 74,600 LB --												
V_{FS} = 173 KCAS	FLD LNGTH	8,980	8,290	7,720	7,220	6,830	6,670	6,520	6,380	6,230	6,010	5,820
V_{SE} = 180 KCAS	V_1 KCAS	151	150	148	147	146	145	145	145	145	146	146
V_{REF} = 158 KCAS	V_R KCAS	152	152	151	151	151	151	151	151	151	151	151
MAX TEMP = 46°C	V_2 KCAS	157	157	157	157	157	157	157	157	157	157	157
-- 74,000 LB --												
V_{FS} = 172 KCAS	FLD LNGTH	8,810	8,150	7,590	7,100	6,720	6,570	6,420	6,280	6,120	5,910	5,730
V_{SE} = 179 KCAS	V_1 KCAS	150	149	147	146	145	145	144	144	145	145	145
V_{REF} = 158 KCAS	V_R KCAS	151	151	151	150	150	150	150	150	150	150	150
MAX TEMP = 46°C	V_2 KCAS	156	156	156	156	156	156	156	156	156	156	156
-- 72,000 LB --												
V_{FS} = 170 KCAS	FLD LNGTH	8,290	7,690	7,170	6,710	6,360	6,210	6,070	5,940	5,800	5,600	5,420
V_{SE} = 177 KCAS	V_1 KCAS	148	146	145	143	142	142	142	142	142	142	142
V_{REF} = 156 KCAS	V_R KCAS	149	149	148	148	148	148	148	148	148	148	148
MAX TEMP = 46°C	V_2 KCAS	154	154	154	154	154	154	154	154	154	154	154
-- 70,000 LB --												
V_{FS} = 167 KCAS	FLD LNGTH	7,800	7,250	6,760	6,340	6,010	5,870	5,740	5,620	5,480	5,290	5,120
V_{SE} = 174 KCAS	V_1 KCAS	145	143	142	140	139	139	139	139	139	139	139
V_{REF} = 154 KCAS	V_R KCAS	147	147	146	146	145	145	145	145	145	145	145
MAX TEMP = 46°C	V_2 KCAS	152	152	152	152	152	152	152	152	152	152	152
-- 68,000 LB --												
V_{FS} = 165 KCAS	FLD LNGTH	7,330	6,820	6,370	5,970	5,670	5,540	5,410	5,300	5,170	4,990	4,830
V_{SE} = 172 KCAS	V_1 KCAS	142	140	139	137	136	136	136	136	136	136	136
V_{REF} = 151 KCAS	V_R KCAS	145	144	144	143	143	143	143	143	143	143	143
MAX TEMP = 46°C	V_2 KCAS	149	149	149	149	149	149	149	149	149	149	149
-- 66,000 LB --												
V_{FS} = 162 KCAS	FLD LNGTH	6,880	6,410	5,990	5,620	5,340	5,220	5,100	5,000	4,870	4,700	4,550
V_{SE} = 169 KCAS	V_1 KCAS	139	137	136	135	133	133	133	133	133	133	133
V_{REF} = 149 KCAS	V_R KCAS	142	142	141	141	141	140	140	140	140	140	140
MAX TEMP = 46°C	V_2 KCAS	147	147	147	147	147	147	147	147	147	147	147
-- 64,000 LB --												
V_{FS} = 160 KCAS	FLD LNGTH	6,450	6,020	5,630	5,290	5,030	4,910	4,800	4,700	4,590	4,430	4,290
V_{SE} = 166 KCAS	V_1 KCAS	136	134	133	132	130	130	130	130	130	130	131
V_{REF} = 147 KCAS	V_R KCAS	140	139	139	138	138	138	138	138	138	138	138
MAX TEMP = 46°C	V_2 KCAS	145	145	145	145	145	145	145	145	145	145	145
-- 62,000 LB --												
V_{FS} = 157 KCAS	FLD LNGTH	6,050	5,640	5,290	4,970	4,730	4,620	4,520	4,430	4,310	4,170	4,040
V_{SE} = 164 KCAS	V_1 KCAS	133	131	130	129	127	127	127	127	127	127	127
V_{REF} = 145 KCAS	V_R KCAS	137	137	136	136	136	136	135	135	135	135	135
MAX TEMP = 46°C	V_2 KCAS	143	143	143	143	143	143	143	143	143	143	143

CAUTION: DO NOT REDUCE TAKEOFF EPR BY MORE THAN .15 OR BELOW A MINIMUM VALUE OF 1.56.

NOTES:

HEADWIND:	Increase available field length 2% for each 5 knots (up to 40 knots).
TAILWIND:	Not permitted using this data at this pressure altitude.
UPHILL SLOPE:	Decrease available field length 20% for each 1% (up to 2%).
DOWNHILL SLOPE:	Not permitted using this data at this pressure altitude.

GIV-SP Takeoff Planning: Flaps 10° - APA 2000 Feet, ctd…

AFM APP. A

TAKEOFF PLANNING CHART

GIV-SP **AIRPORT PRESSURE ALTITUDE = 2,000 FEET** **TAKEOFF FLAP 10°**

74,600 LB MTOGW	OAT (°C)	45	40	35	30	25	20	15	10	0	-10	-19
	OAT (°F)	113	104	95	86	77	68	59	50	32	14	-2
	RATED EPR	1.62	1.64	1.66	1.69	1.71	1.72	1.72	1.72	1.72	1.72	1.72
-- 60,000 LB --												
V_{FS} = 155 KCAS	FLD LNGTH	5,660	5,290	4,960	4,670	4,440	4,340	4,250	4,160	4,050	3,920	3,790
V_{SE} = 161 KCAS	V_1 KCAS	130	128	127	126	125	124	124	124	124	124	125
V_{REF} = 142 KCAS	V_R KCAS	135	134	134	134	133	133	133	133	133	133	133
MAX TEMP = 46°C	V_2 KCAS	140	140	140	140	140	140	140	140	140	140	140
-- 58,000 LB --												
V_{FS} = 152 KCAS	FLD LNGTH	5,280	4,940	4,640	4,370	4,160	4,060	3,980	3,890	3,800	3,670	3,550
V_{SE} = 158 KCAS	V_1 KCAS	127	125	124	122	121	121	121	121	121	121	121
V_{REF} = 140 KCAS	V_R KCAS	132	132	131	131	130	130	130	130	130	130	130
MAX TEMP = 46°C	V_2 KCAS	138	138	138	138	138	138	138	138	138	138	138
-- 56,000 LB --												
V_{FS} = 150 KCAS	FLD LNGTH	4,920	4,610	4,330	4,080	3,880	3,800	3,720	3,640	3,550	3,430	3,320
V_{SE} = 156 KCAS	V_1 KCAS	124	122	121	119	118	118	118	118	118	118	118
V_{REF} = 137 KCAS	V_R KCAS	130	129	129	128	128	128	128	128	128	128	128
MAX TEMP = 46°C	V_2 KCAS	136	136	136	136	136	136	136	136	136	136	136
-- 54,000 LB --												
V_{FS} = 147 KCAS	FLD LNGTH	4,620	4,330	4,070	3,870	3,760	3,700	3,630	3,570	3,470	3,350	3,250
V_{SE} = 153 KCAS	V_1 KCAS	121	119	118	117	117	117	118	118	118	118	118
V_{REF} = 135 KCAS	V_R KCAS	127	127	127	126	126	126	126	126	126	126	126
MAX TEMP = 46°C	V_2 KCAS	134	134	134	134	134	134	134	134	134	134	134
-- 52,000 LB --												
V_{FS} = 144 KCAS	FLD LNGTH	4,370	4,100	3,910	3,800	3,700	3,630	3,570	3,510	3,410	3,300	3,200
V_{SE} = 150 KCAS	V_1 KCAS	119	117	117	117	118	118	118	118	118	118	118
V_{REF} = 132 KCAS	V_R KCAS	126	125	125	125	124	124	124	124	124	124	124
MAX TEMP = 46°C	V_2 KCAS	132	132	132	132	132	132	132	132	132	132	132
-- 50,000 LB --												
V_{FS} = 142 KCAS	FLD LNGTH	4,140	3,960	3,840	3,730	3,630	3,570	3,510	3,450	3,350	3,240	3,140
V_{SE} = 147 KCAS	V_1 KCAS	117	117	117	118	118	118	118	118	118	118	118
V_{REF} = 130 KCAS	V_R KCAS	124	124	123	123	123	122	122	122	122	122	122
MAX TEMP = 46°C	V_2 KCAS	131	131	131	131	131	131	131	131	131	131	131
-- 48,000 LB --												
V_{FS} = 139 KCAS	FLD LNGTH	4,010	3,890	3,770	3,660	3,570	3,510	3,450	3,390	3,290	3,190	3,090
V_{SE} = 144 KCAS	V_1 KCAS	117	117	117	118	118	118	118	119	119	119	119
V_{REF} = 127 KCAS	V_R KCAS	124	124	123	123	122	122	122	122	122	122	122
MAX TEMP = 46°C	V_2 KCAS	131	131	131	131	131	131	131	131	131	131	131
-- 46,000 LB --												
V_{FS} = 136 KCAS	FLD LNGTH	3,930	3,810	3,690	3,590	3,500	3,440	3,390	3,330	3,230	3,130	3,040
V_{SE} = 141 KCAS	V_1 KCAS	117	117	118	118	118	119	119	119	119	119	119
V_{REF} = 124 KCAS	V_R KCAS	124	123	123	122	122	122	122	122	122	122	122
MAX TEMP = 46°C	V_2 KCAS	131	131	131	131	131	131	131	131	131	131	131

CAUTION: DO NOT REDUCE TAKEOFF EPR BY MORE THAN .15 OR BELOW A MINIMUM VALUE OF 1.56.

NOTES:

HEADWIND: Increase available field length 2% for each 5 knots (up to 40 knots).

TAILWIND: Not permitted using this data at this pressure altitude.

UPHILL SLOPE: Decrease available field length 20% for each 1% (up to 2%).

DOWNHILL SLOPE: Not permitted using this data at this pressure altitude.

GIV-SP Takeoff Planning: Flaps 10° - APA 4000 Feet

AFM APP. A

TAKEOFF PLANNING CHART

GIV-SP **AIRPORT PRESSURE ALTITUDE = 4,000 FEET** **TAKEOFF FLAP 10°**

74,600 LB MTOGW	OAT (°C)	40	35	30	25	20	15	10	5	-5	-15	-23
	OAT (°F)	104	95	86	77	68	59	50	41	23	5	-9
	RATED EPR	1.63	1.66	1.69	1.71	1.72	1.74	1.74	1.74	1.74	1.74	1.74
-- 74,600 LB --												
V_{FS} = 174 KCAS	FLD LNGTH	10,060	9,250	8,620	8,130	7,810	7,530	7,290	7,170	6,900	6,660	6,460
V_{SE} = 181 KCAS	V_1 KCAS	153	152	150	149	148	148	148	148	147	148	148
V_{REF} = 159 KCAS	V_R KCAS	154	153	153	153	152	152	152	152	152	152	152
MAX TEMP = 42°C	V_2 KCAS	158	158	158	158	158	158	158	158	158	158	158
-- 74,000 LB --												
V_{FS} = 174 KCAS	FLD LNGTH	9,850	9,090	8,470	8,000	7,680	7,400	7,170	7,050	6,780	6,550	6,360
V_{SE} = 181 KCAS	V_1 KCAS	152	151	149	148	148	147	147	147	147	147	147
V_{REF} = 158 KCAS	V_R KCAS	153	153	152	152	152	152	151	151	151	151	151
MAX TEMP = 42°C	V_2 KCAS	157	157	157	157	157	157	157	157	157	157	157
-- 72,000 LB --												
V_{FS} = 171 KCAS	FLD LNGTH	9,240	8,570	7,990	7,550	7,250	7,000	6,780	6,670	6,410	6,190	6,010
V_{SE} = 178 KCAS	V_1 KCAS	150	148	147	146	145	144	144	144	144	144	144
V_{REF} = 156 KCAS	V_R KCAS	151	150	150	150	149	149	149	149	149	149	149
MAX TEMP = 42°C	V_2 KCAS	155	155	155	155	155	155	155	155	155	155	155
-- 70,000 LB --												
V_{FS} = 169 KCAS	FLD LNGTH	8,680	8,070	7,540	7,130	6,850	6,610	6,400	6,300	6,060	5,850	5,680
V_{SE} = 176 KCAS	V_1 KCAS	147	145	144	143	142	141	141	141	141	141	141
V_{REF} = 154 KCAS	V_R KCAS	148	148	148	147	147	147	147	147	147	147	147
MAX TEMP = 42°C	V_2 KCAS	153	153	153	153	153	153	153	153	153	153	153
-- 68,000 LB --												
V_{FS} = 166 KCAS	FLD LNGTH	8,150	7,580	7,090	6,710	6,450	6,230	6,040	5,940	5,720	5,520	5,360
V_{SE} = 173 KCAS	V_1 KCAS	144	142	141	140	139	139	138	138	138	138	138
V_{REF} = 151 KCAS	V_R KCAS	146	146	145	145	145	144	144	144	144	144	144
MAX TEMP = 42°C	V_2 KCAS	151	151	151	151	151	151	151	151	151	151	151
-- 66,000 LB --												
V_{FS} = 164 KCAS	FLD LNGTH	7,650	7,130	6,670	6,320	6,080	5,870	5,690	5,590	5,390	5,200	5,050
V_{SE} = 171 KCAS	V_1 KCAS	141	139	138	137	136	136	135	135	135	135	135
V_{REF} = 149 KCAS	V_R KCAS	143	143	143	142	142	142	142	142	142	142	142
MAX TEMP = 42°C	V_2 KCAS	148	148	148	148	148	148	148	148	148	148	148
-- 64,000 LB --												
V_{FS} = 161 KCAS	FLD LNGTH	7,170	6,690	6,270	5,940	5,720	5,520	5,350	5,270	5,070	4,890	4,750
V_{SE} = 168 KCAS	V_1 KCAS	138	136	135	134	133	133	132	132	132	132	132
V_{REF} = 147 KCAS	V_R KCAS	141	141	140	140	140	140	139	139	139	139	139
MAX TEMP = 42°C	V_2 KCAS	146	146	146	146	146	146	146	146	146	146	146
-- 62,000 LB --												
V_{FS} = 159 KCAS	FLD LNGTH	6,710	6,270	5,880	5,580	5,370	5,190	5,030	4,950	4,770	4,600	4,470
V_{SE} = 165 KCAS	V_1 KCAS	135	133	132	131	130	130	129	129	129	129	130
V_{REF} = 145 KCAS	V_R KCAS	139	138	138	137	137	137	137	137	137	137	137
MAX TEMP = 42°C	V_2 KCAS	144	144	144	144	144	144	144	144	144	144	144

CAUTION: DO NOT REDUCE TAKEOFF EPR BY MORE THAN .15 OR BELOW A MINIMUM VALUE OF 1.56.

NOTES:

HEADWIND: Increase available field length 2% for each 5 knots (up to 40 knots).

TAILWIND: Not permitted using this data at this pressure altitude.

UPHILL SLOPE: Decrease available field length 20% for each 1% (up to 2%).

DOWNHILL SLOPE: Not permitted using this data at this pressure altitude.

GIV-SP Takeoff Planning: Flaps 10° - APA 4000 Feet, ctd…

AFM APP. A

TAKEOFF PLANNING CHART

GIV-SP **AIRPORT PRESSURE ALTITUDE = 4,000 FEET** **TAKEOFF FLAP 10°**

74,600 LB MTOGW	OAT (°C)	40	35	30	25	20	15	10	5	-5	-15	-23
	OAT (°F)	104	95	86	77	68	59	50	41	23	5	-9
	RATED EPR	1.63	1.66	1.69	1.71	1.72	1.74	1.74	1.74	1.74	1.74	1.74
-- 60,000 LB --												
V_{FS} = 156 KCAS	FLD LNGTH	6,280	5,880	5,520	5,240	5,040	4,870	4,730	4,650	4,480	4,320	4,200
V_{SE} = 163 KCAS	V_1 KCAS	132	130	129	128	127	127	126	126	126	126	127
V_{REF} = 142 KCAS	V_R KCAS	136	136	135	135	135	135	134	134	134	134	134
MAX TEMP = 42°C	V_2 KCAS	142	142	142	142	142	142	142	142	142	142	142
-- 58,000 LB --												
V_{FS} = 154 KCAS	FLD LNGTH	5,860	5,480	5,150	4,890	4,710	4,560	4,420	4,350	4,190	4,040	3,930
V_{SE} = 160 KCAS	V_1 KCAS	129	127	126	125	124	124	123	123	123	123	123
V_{REF} = 140 KCAS	V_R KCAS	134	133	133	132	132	132	132	132	132	132	132
MAX TEMP = 42°C	V_2 KCAS	139	139	139	139	139	139	139	139	139	139	139
-- 56,000 LB --												
V_{FS} = 151 KCAS	FLD LNGTH	5,450	5,110	4,810	4,570	4,400	4,260	4,130	4,060	3,910	3,780	3,670
V_{SE} = 157 KCAS	V_1 KCAS	125	124	123	121	121	120	120	120	120	120	120
V_{REF} = 137 KCAS	V_R KCAS	131	130	130	130	129	129	129	129	129	129	129
MAX TEMP = 42°C	V_2 KCAS	137	137	137	137	137	137	137	137	137	137	137
-- 54,000 LB --												
V_{FS} = 148 KCAS	FLD LNGTH	5,100	4,780	4,500	4,280	4,130	3,990	3,880	3,820	3,690	3,570	3,470
V_{SE} = 154 KCAS	V_1 KCAS	123	121	120	119	118	117	117	117	117	117	118
V_{REF} = 135 KCAS	V_R KCAS	129	128	128	127	127	127	127	127	127	127	127
MAX TEMP = 42°C	V_2 KCAS	134	134	134	134	134	134	134	134	134	134	134
-- 52,000 LB --												
V_{FS} = 146 KCAS	FLD LNGTH	4,790	4,500	4,240	4,070	3,980	3,890	3,810	3,750	3,630	3,510	3,410
V_{SE} = 151 KCAS	V_1 KCAS	120	119	117	117	117	117	117	117	118	118	118
V_{REF} = 132 KCAS	V_R KCAS	127	126	126	125	125	125	125	125	125	125	125
MAX TEMP = 42°C	V_2 KCAS	133	133	133	133	133	133	133	133	133	133	133
-- 50,000 LB --												
V_{FS} = 143 KCAS	FLD LNGTH	4,490	4,260	4,110	4,000	3,910	3,820	3,750	3,690	3,560	3,440	3,350
V_{SE} = 148 KCAS	V_1 KCAS	117	117	117	117	117	117	118	118	118	118	118
V_{REF} = 130 KCAS	V_R KCAS	125	124	124	123	123	123	123	123	123	123	123
MAX TEMP = 42°C	V_2 KCAS	131	131	131	131	131	131	131	131	131	131	131
-- 48,000 LB --												
V_{FS} = 140 KCAS	FLD LNGTH	4,340	4,160	4,030	3,920	3,830	3,750	3,680	3,620	3,500	3,380	3,290
V_{SE} = 145 KCAS	V_1 KCAS	117	117	117	117	118	118	118	118	118	118	118
V_{REF} = 127 KCAS	V_R KCAS	124	124	123	123	123	123	122	122	122	122	122
MAX TEMP = 42°C	V_2 KCAS	131	131	131	131	131	131	131	131	131	131	131
-- 46,000 LB --												
V_{FS} = 137 KCAS	FLD LNGTH	4,200	4,070	3,950	3,840	3,760	3,680	3,610	3,550	3,430	3,320	3,230
V_{SE} = 142 KCAS	V_1 KCAS	116	117	117	118	118	118	118	118	118	119	119
V_{REF} = 124 KCAS	V_R KCAS	124	124	123	123	123	122	122	122	122	122	122
MAX TEMP = 42°C	V_2 KCAS	131	131	131	131	131	131	131	131	131	131	131

CAUTION: DO NOT REDUCE TAKEOFF EPR BY MORE THAN .15 OR BELOW A MINIMUM VALUE OF 1.56.

NOTES:

HEADWIND:	Increase available field length 2% for each 5 knots (up to 40 knots).
TAILWIND:	Not permitted using this data at this pressure altitude.
UPHILL SLOPE:	Decrease available field length 20% for each 1% (up to 2%).
DOWNHILL SLOPE:	Not permitted using this data at this pressure altitude.

GIV-SP Takeoff Planning: Flaps 10° - APA 6000 Feet

AFM APP. A

TAKEOFF PLANNING CHART

GIV-SP | AIRPORT PRESSURE ALTITUDE = 6,000 FEET | TAKEOFF FLAP 10°

74,600 LB MTOGW	OAT (°C)	38	35	30	25	20	15	10	5	-5	-15	-25
	OAT (°F)	101	95	86	77	68	59	50	41	23	5	-13
	RATED EPR	1.64	1.65	1.68	1.71	1.72	1.73	1.74	1.74	1.75	1.75	1.75
-- 74,600 LB --												
V_{FS} = 177 KCAS	FLD LNGTH	******	******	10,460	9,840	9,420	9,080	8,750	8,550	8,160	7,880	7,590
V_{SE} = 184 KCAS	V_1 KCAS	******	******	154	153	152	152	151	151	151	151	151
V_{REF} = 159 KCAS	V_R KCAS	******	******	155	155	155	155	154	154	154	154	154
MAX TEMP = 34°C	V_2 KCAS	******	******	160	160	160	160	160	160	160	160	160
-- 74,000 LB --												
V_{FS} = 176 KCAS	FLD LNGTH	******	11,220	10,260	9,670	9,260	8,920	8,600	8,400	8,030	7,740	7,460
V_{SE} = 183 KCAS	V_1 KCAS	******	155	153	152	152	151	151	150	150	150	151
V_{REF} = 159 KCAS	V_R KCAS	******	155	154	154	154	154	154	154	154	154	154
MAX TEMP = 35°C	V_2 KCAS	******	159	159	159	159	159	159	159	159	159	159
-- 72,000 LB --												
V_{FS} = 174 KCAS	FLD LNGTH	******	10,460	9,660	9,120	8,740	8,420	8,120	7,940	7,580	7,320	7,050
V_{SE} = 181 KCAS	V_1 KCAS	******	152	151	150	149	148	148	148	147	148	148
V_{REF} = 157 KCAS	V_R KCAS	******	152	152	152	152	152	151	151	151	151	151
MAX TEMP = 37°C	V_2 KCAS	******	157	157	157	157	157	157	157	157	157	157
-- 70,000 LB --												
V_{FS} = 171 KCAS	FLD LNGTH	10,250	9,780	9,090	8,590	8,240	7,940	7,660	7,490	7,160	6,910	6,650
V_{SE} = 178 KCAS	V_1 KCAS	150	149	148	147	146	146	145	145	145	145	145
V_{REF} = 154 KCAS	V_R KCAS	150	150	150	150	149	149	149	149	149	149	149
MAX TEMP = 38°C	V_2 KCAS	155	155	155	155	155	155	155	155	155	155	155
-- 68,000 LB --												
V_{FS} = 169 KCAS	FLD LNGTH	9,590	9,160	8,540	8,080	7,750	7,480	7,220	7,050	6,740	6,500	6,270
V_{SE} = 175 KCAS	V_1 KCAS	147	146	145	144	143	143	142	142	142	142	142
V_{REF} = 152 KCAS	V_R KCAS	148	148	147	147	147	147	147	147	146	146	146
MAX TEMP = 38°C	V_2 KCAS	152	152	152	152	152	152	152	152	152	152	152
-- 66,000 LB --												
V_{FS} = 166 KCAS	FLD LNGTH	8,980	8,590	8,020	7,590	7,290	7,030	6,790	6,640	6,340	6,120	5,900
V_{SE} = 173 KCAS	V_1 KCAS	144	143	142	141	140	140	139	139	139	139	139
V_{REF} = 150 KCAS	V_R KCAS	146	145	145	145	144	144	144	144	144	144	144
MAX TEMP = 38°C	V_2 KCAS	150	150	150	150	150	150	150	150	150	150	150
-- 64,000 LB --												
V_{FS} = 163 KCAS	FLD LNGTH	8,400	8,050	7,520	7,130	6,850	6,610	6,380	6,240	5,970	5,760	5,550
V_{SE} = 170 KCAS	V_1 KCAS	141	140	139	138	137	137	136	136	136	136	136
V_{REF} = 148 KCAS	V_R KCAS	143	143	142	142	142	142	142	142	142	142	142
MAX TEMP = 38°C	V_2 KCAS	148	148	148	148	148	148	148	148	148	148	148
-- 62,000 LB --												
V_{FS} = 161 KCAS	FLD LNGTH	7,860	7,530	7,050	6,680	6,420	6,200	5,990	5,860	5,600	5,410	5,210
V_{SE} = 167 KCAS	V_1 KCAS	138	137	136	135	134	134	133	133	133	133	133
V_{REF} = 145 KCAS	V_R KCAS	141	140	140	140	140	139	139	139	139	139	139
MAX TEMP = 38°C	V_2 KCAS	145	145	145	145	145	145	145	145	145	145	145

CAUTION: DO NOT REDUCE TAKEOFF EPR BY MORE THAN .15 OR BELOW A MINIMUM VALUE OF 1.56.

NOTES:

HEADWIND:	Increase available field length 2% for each 5 knots (up to 40 knots).
TAILWIND:	Not permitted using this data at this pressure altitude.
UPHILL SLOPE:	Decrease available field length 20% for each 1% (up to 2%).
DOWNHILL SLOPE:	Not permitted using this data at this pressure altitude.

GIV-SP Takeoff Planning: Flaps 10° - APA 6000 Feet, ctd…

AFM APP. A

TAKEOFF PLANNING CHART

GIV-SP **AIRPORT PRESSURE ALTITUDE = 6,000 FEET** **TAKEOFF FLAP 10°**

74,600 LB MTOGW	OAT (°C)	38	35	30	25	20	15	10	5	-5	-15	-25
	OAT (°F)	101	95	86	77	68	59	50	41	23	5	-13
	RATED EPR	1.64	1.65	1.68	1.71	1.72	1.73	1.74	1.74	1.75	1.75	1.75
-- 60,000 LB --												
V_{FS} = 158 KCAS	FLD LNGTH	7,340	7,040	6,600	6,260	6,020	5,820	5,620	5,500	5,260	5,070	4,890
V_{SE} = 165 KCAS	V_1 KCAS	135	134	133	132	131	131	130	130	130	130	130
V_{REF} = 143 KCAS	V_R KCAS	138	138	138	137	137	137	137	137	137	137	137
MAX TEMP = 38°C	V_2 KCAS	143	143	143	143	143	143	143	143	143	143	143
-- 58,000 LB --												
V_{FS} = 156 KCAS	FLD LNGTH	6,840	6,560	6,150	5,840	5,620	5,430	5,250	5,140	4,910	4,740	4,570
V_{SE} = 162 KCAS	V_1 KCAS	132	131	130	129	128	127	127	127	127	127	127
V_{REF} = 140 KCAS	V_R KCAS	135	135	135	135	134	134	134	134	134	134	134
MAX TEMP = 38°C	V_2 KCAS	141	141	141	141	141	141	141	141	141	141	141
-- 56,000 LB --												
V_{FS} = 153 KCAS	FLD LNGTH	6,360	6,110	5,730	5,450	5,240	5,070	4,900	4,790	4,590	4,430	4,270
V_{SE} = 159 KCAS	V_1 KCAS	128	128	126	125	125	124	124	124	123	123	123
V_{REF} = 138 KCAS	V_R KCAS	133	133	132	132	132	131	131	131	131	131	131
MAX TEMP = 38°C	V_2 KCAS	138	138	138	138	138	138	138	138	138	138	138
-- 54,000 LB --												
V_{FS} = 150 KCAS	FLD LNGTH	5,910	5,680	5,340	5,080	4,890	4,730	4,570	4,470	4,280	4,130	3,980
V_{SE} = 156 KCAS	V_1 KCAS	125	124	123	122	122	121	120	120	120	120	120
V_{REF} = 135 KCAS	V_R KCAS	130	130	130	129	129	129	129	129	128	128	128
MAX TEMP = 38°C	V_2 KCAS	136	136	136	136	136	136	136	136	136	136	136
-- 52,000 LB --												
V_{FS} = 147 KCAS	FLD LNGTH	5,500	5,290	4,970	4,730	4,560	4,410	4,270	4,170	4,000	3,860	3,720
V_{SE} = 153 KCAS	V_1 KCAS	122	121	120	119	118	118	117	117	117	117	117
V_{REF} = 133 KCAS	V_R KCAS	128	127	127	127	126	126	126	126	126	126	126
MAX TEMP = 38°C	V_2 KCAS	133	133	133	133	133	133	133	133	133	133	133
-- 50,000 LB --												
V_{FS} = 145 KCAS	FLD LNGTH	5,100	4,910	4,620	4,430	4,320	4,230	4,130	4,060	3,910	3,780	3,650
V_{SE} = 150 KCAS	V_1 KCAS	119	118	117	116	116	117	117	117	117	117	117
V_{REF} = 130 KCAS	V_R KCAS	125	125	124	124	124	124	124	123	123	123	123
MAX TEMP = 38°C	V_2 KCAS	131	131	131	131	131	131	131	131	131	131	131
-- 48,000 LB --												
V_{FS} = 141 KCAS	FLD LNGTH	4,910	4,720	4,480	4,340	4,230	4,140	4,050	3,980	3,840	3,710	3,580
V_{SE} = 147 KCAS	V_1 KCAS	118	117	116	116	117	117	117	117	117	117	118
V_{REF} = 128 KCAS	V_R KCAS	125	125	124	124	124	123	123	123	123	123	123
MAX TEMP = 38°C	V_2 KCAS	131	131	131	131	131	131	131	131	131	131	131
-- 46,000 LB --												
V_{FS} = 138 KCAS	FLD LNGTH	4,710	4,550	4,360	4,240	4,140	4,060	3,970	3,900	3,760	3,630	3,510
V_{SE} = 144 KCAS	V_1 KCAS	117	117	116	117	117	117	117	117	118	118	118
V_{REF} = 125 KCAS	V_R KCAS	125	124	124	124	123	123	123	123	123	123	123
MAX TEMP = 38°C	V_2 KCAS	131	131	131	131	131	131	131	131	131	131	131

CAUTION: DO NOT REDUCE TAKEOFF EPR BY MORE THAN .15 OR BELOW A MINIMUM VALUE OF 1.56.

NOTES:

HEADWIND: Increase available field length 2% for each 5 knots (up to 40 knots).
TAILWIND: Not permitted using this data at this pressure altitude.
UPHILL SLOPE: Decrease available field length 20% for each 1% (up to 2%).
DOWNHILL SLOPE: Not permitted using this data at this pressure altitude.

GIV-SP Takeoff Planning: Flaps 10° - APA 8000 Feet

AFM APP. A

TAKEOFF PLANNING CHART

GIV-SP **AIRPORT PRESSURE ALTITUDE = 8,000 FEET** **TAKEOFF FLAP 10°**

74,600 LB MTOGW	OAT (°C)	34	30	25	20	15	10	5	0	-10	-20	-30
	OAT (°F)	93	86	77	68	59	50	41	32	14	-4	-22
	RATED EPR	1.66	1.68	1.70	1.71	1.72	1.73	1.74	1.75	1.75	1.75	1.75
-- 74,600 LB --												
V_{FS} = 179 KCAS	FLD LNGTH	******	******	******	******	******	10,650	10,350	9,990	9,560	9,210	8,870
V_{SE} = 186 KCAS	V_1 KCAS	******	******	******	******	******	156	155	155	155	155	155
V_{REF} = 161 KCAS	V_R KCAS	******	******	******	******	******	157	157	157	157	157	157
MAX TEMP = 10°C	V_2 KCAS	******	******	******	******	******	161	161	161	161	161	161
-- 74,000 LB --												
V_{FS} = 178 KCAS	FLD LNGTH	******	******	******	******	10,890	10,460	10,170	9,820	9,390	9,050	8,720
V_{SE} = 185 KCAS	V_1 KCAS	******	******	******	******	155	155	154	154	154	154	154
V_{REF} = 160 KCAS	V_R KCAS	******	******	******	******	156	156	156	156	156	156	156
MAX TEMP = 15°C	V_2 KCAS	******	******	******	******	161	161	161	161	161	161	161
-- 72,000 LB --												
V_{FS} = 176 KCAS	FLD LNGTH	******	******	11,160	10,670	10,250	9,850	9,580	9,260	8,860	8,540	8,220
V_{SE} = 183 KCAS	V_1 KCAS	******	******	154	153	152	152	152	151	151	151	151
V_{REF} = 158 KCAS	V_R KCAS	******	******	154	154	154	154	154	154	153	153	153
MAX TEMP = 28°C	V_2 KCAS	******	******	159	159	159	159	159	159	159	159	159
-- 70,000 LB --												
V_{FS} = 173 KCAS	FLD LNGTH	******	11,160	10,470	10,030	9,650	9,280	9,030	8,720	8,350	8,050	7,750
V_{SE} = 180 KCAS	V_1 KCAS	******	152	151	150	149	149	149	148	148	148	148
V_{REF} = 156 KCAS	V_R KCAS	******	152	152	152	152	151	151	151	151	151	151
MAX TEMP = 32°C	V_2 KCAS	******	156	156	156	156	156	156	156	156	156	156
-- 68,000 LB --												
V_{FS} = 171 KCAS	FLD LNGTH	11,130	10,420	9,810	9,420	9,060	8,720	8,480	8,200	7,850	7,570	7,290
V_{SE} = 178 KCAS	V_1 KCAS	150	149	148	147	146	146	146	145	145	145	145
V_{REF} = 154 KCAS	V_R KCAS	150	150	149	149	149	149	149	149	149	149	149
MAX TEMP = 34°C	V_2 KCAS	154	154	154	154	154	154	154	154	154	154	154
-- 66,000 LB --												
V_{FS} = 168 KCAS	FLD LNGTH	10,340	9,740	9,200	8,830	8,500	8,190	7,970	7,710	7,380	7,110	6,850
V_{SE} = 175 KCAS	V_1 KCAS	147	146	145	144	144	143	143	142	142	142	142
V_{REF} = 151 KCAS	V_R KCAS	147	147	147	147	147	146	146	146	146	146	146
MAX TEMP = 34°C	V_2 KCAS	152	152	152	152	152	152	152	152	152	152	152
-- 64,000 LB --												
V_{FS} = 166 KCAS	FLD LNGTH	9,650	9,110	8,620	8,280	7,980	7,680	7,480	7,240	6,930	6,680	6,430
V_{SE} = 172 KCAS	V_1 KCAS	144	143	142	141	141	140	140	139	139	139	139
V_{REF} = 149 KCAS	V_R KCAS	145	145	144	144	144	144	144	144	144	144	144
MAX TEMP = 34°C	V_2 KCAS	149	149	149	149	149	149	149	149	149	149	149
-- 62,000 LB --												
V_{FS} = 163 KCAS	FLD LNGTH	9,010	8,520	8,070	7,760	7,480	7,200	7,020	6,790	6,500	6,270	6,040
V_{SE} = 169 KCAS	V_1 KCAS	141	140	139	138	138	137	137	136	136	136	136
V_{REF} = 147 KCAS	V_R KCAS	143	142	142	142	142	142	141	141	141	141	141
MAX TEMP = 34°C	V_2 KCAS	147	147	147	147	147	147	147	147	147	147	147

CAUTION: DO NOT REDUCE TAKEOFF EPR BY MORE THAN .15 OR BELOW A MINIMUM VALUE OF 1.56.

NOTES:

- HEADWIND: Increase available field length 2% for each 5 knots (up to 40 knots).
- TAILWIND: Not permitted using this data at this pressure altitude.
- UPHILL SLOPE: Decrease available field length 20% for each 1% (up to 2%).
- DOWNHILL SLOPE: Not permitted using this data at this pressure altitude.

GIV-SP Takeoff Planning: Flaps 10° - APA 8000 Feet, ctd…

AFM APP. A

TAKEOFF PLANNING CHART

GIV-SP **AIRPORT PRESSURE ALTITUDE = 8,000 FEET** **TAKEOFF FLAP 10°**

74,600 LB MTOGW	OAT (°C)	34	30	25	20	15	10	5	0	-10	-20	-30
	OAT (°F)	93	86	77	68	59	50	41	32	14	-4	-22
	RATED EPR	1.66	1.68	1.70	1.71	1.72	1.73	1.74	1.75	1.75	1.75	1.75
-- 60,000 LB --												
V_{FS} = 160 KCAS	FLD LNGTH	8,410	7,970	7,550	7,260	7,000	6,750	6,570	6,360	6,090	5,870	5,660
V_{SE} = 167 KCAS	V_1 KCAS	138	137	136	135	135	134	134	133	133	133	133
V_{REF} = 144 KCAS	V_R KCAS	140	140	140	139	139	139	139	139	139	139	139
MAX TEMP = 34°C	V_2 KCAS	145	145	145	145	145	145	145	145	145	145	145
-- 58,000 LB --												
V_{FS} = 158 KCAS	FLD LNGTH	7,820	7,410	7,030	6,770	6,530	6,290	6,130	5,940	5,690	5,480	5,280
V_{SE} = 164 KCAS	V_1 KCAS	134	133	132	132	131	131	131	130	130	130	130
V_{REF} = 142 KCAS	V_R KCAS	137	137	137	137	136	136	136	136	136	136	136
MAX TEMP = 34°C	V_2 KCAS	142	142	142	142	142	142	142	142	142	142	142
-- 56,000 LB --												
V_{FS} = 155 KCAS	FLD LNGTH	7,260	6,890	6,550	6,300	6,080	5,870	5,720	5,540	5,300	5,110	4,930
V_{SE} = 161 KCAS	V_1 KCAS	131	130	129	129	128	128	127	127	127	127	127
V_{REF} = 139 KCAS	V_R KCAS	135	134	134	134	134	134	133	133	133	133	133
MAX TEMP = 34°C	V_2 KCAS	140	140	140	140	140	140	140	140	140	140	140
-- 54,000 LB --												
V_{FS} = 152 KCAS	FLD LNGTH	6,740	6,400	6,080	5,860	5,660	5,460	5,320	5,150	4,940	4,760	4,590
V_{SE} = 158 KCAS	V_1 KCAS	128	127	126	125	125	124	124	124	123	124	124
V_{REF} = 137 KCAS	V_R KCAS	132	132	131	131	131	131	131	131	130	130	130
MAX TEMP = 34°C	V_2 KCAS	137	137	137	137	137	137	137	137	137	137	137
-- 52,000 LB --												
V_{FS} = 149 KCAS	FLD LNGTH	6,250	5,940	5,650	5,440	5,260	5,070	4,950	4,790	4,590	4,430	4,270
V_{SE} = 155 KCAS	V_1 KCAS	125	124	123	122	121	121	121	120	120	120	120
V_{REF} = 134 KCAS	V_R KCAS	129	129	129	128	128	128	128	128	128	128	128
MAX TEMP = 34°C	V_2 KCAS	135	135	135	135	135	135	135	135	135	135	135
-- 50,000 LB --												
V_{FS} = 146 KCAS	FLD LNGTH	5,780	5,500	5,240	5,050	4,880	4,710	4,590	4,450	4,270	4,110	3,960
V_{SE} = 152 KCAS	V_1 KCAS	121	120	119	119	118	118	117	117	117	117	117
V_{REF} = 132 KCAS	V_R KCAS	127	126	126	126	126	125	125	125	125	125	125
MAX TEMP = 34°C	V_2 KCAS	132	132	132	132	132	132	132	132	132	132	132
-- 48,000 LB --												
V_{FS} = 143 KCAS	FLD LNGTH	5,520	5,250	5,000	4,820	4,660	4,500	4,410	4,310	4,150	4,010	3,870
V_{SE} = 149 KCAS	V_1 KCAS	120	119	118	117	117	116	116	117	117	117	117
V_{REF} = 129 KCAS	V_R KCAS	126	126	125	125	125	125	125	124	124	124	124
MAX TEMP = 34°C	V_2 KCAS	132	132	132	132	132	132	132	132	132	132	132
-- 46,000 LB --												
V_{FS} = 140 KCAS	FLD LNGTH	5,260	5,010	4,770	4,610	4,500	4,400	4,310	4,220	4,070	3,930	3,790
V_{SE} = 146 KCAS	V_1 KCAS	119	118	117	116	116	117	117	117	117	117	117
V_{REF} = 126 KCAS	V_R KCAS	125	125	125	124	124	124	124	124	124	124	124
MAX TEMP = 34°C	V_2 KCAS	131	131	131	131	131	131	131	131	131	131	131

CAUTION: DO NOT REDUCE TAKEOFF EPR BY MORE THAN .15 OR BELOW A MINIMUM VALUE OF 1.56.

NOTES:

HEADWIND: Increase available field length 2% for each 5 knots (up to 40 knots).
TAILWIND: Not permitted using this data at this pressure altitude.
UPHILL SLOPE: Decrease available field length 20% for each 1% (up to 2%).
DOWNHILL SLOPE: Not permitted using this data at this pressure altitude.

GIV-SP Takeoff Climb Requirements: Climb Limited Weights: Flaps 20° - Minimum Gradient

AFM 5.3

For airplanes SN 1214 and subsequent and SN 1000 thru 1213 with ASC 190 incorporated.

Conditions:

- For FAA Climb Requirements
- Based on 10 minutes of Maximum Takeoff Thrust in the event of an engine failure
- Cowl anti-ice ON below 10° C

Ambient Temp: °C	Takeoff Limited Weight (Pounds) For Airport Pressure Altitudes As Shown					
	Sea Level	2000 Feet	4000 Feet	6000 Feet	8000 Feet	10000 Feet
-10 & Below	74600	74600	74600	74600	74600	71900
-5	74600	74600	74600	74600	74600	71300
0	74600	74600	74600	74600	74600	70600
5	74600	74600	74600	74600	74600	69300
10	74600	74600	74600	74600	74600	68500
15	74600	74600	74600	74600	73200	67100
20	74600	74600	74600	74600	71700	65700
25	74600	74600	74600	74600	70200	64300
30	74600	74600	74600	73600	67700	62600
35	74600	74600	74600	70100	-	-
40	74600	74600	72000	-	-	-
45	74600	74000	-	-	-	-
50	74600	-	-	-	-	-

GIV-SP Takeoff Climb Requirements: Climb Limited Weights: Flaps 10° - Minimum Gradient AFM 5.3

For airplanes SN 1214 and subsequent and SN 1000 thru 1213 with ASC 190 incorporated.

Conditions:

- For FAA Climb Requirements
- Based on 10 minutes of Maximum Takeoff Thrust in the event of an engine failure
- Cowl anti-ice ON below 10° C

Ambient Temp: °C	Takeoff Limited Weight (Pounds) For Airport Pressure Altitudes As Shown					
	Sea Level	2000 Feet	4000 Feet	6000 Feet	8000 Feet	10000 Feet
0 & Below	74600	74600	74600	74600	74600	74600
5	74600	74600	74600	74600	74600	73200
10	74600	74600	74600	74600	74600	72200
15	74600	74600	74600	74600	74600	70600
20	74600	74600	74600	74600	74600	69000
25	74600	74600	74600	74600	74200	67500
30	74600	74600	74600	74600	71200	65500
35	74600	74600	74600	74000	-	-
40	74600	74600	74600	-	-	-
45	74600	74600	-	-	-	-
50	74600	-	-	-	-	-

GIV-SP Takeoff Climb Requirements: Climb Limited Weights: Flaps 20° - Standard Instrument Departure

GIV-OIS-07

(SN 1214 and subs and SN 1000 thru 1213 with ASC 190)

NOTE: For complete text and examples, see **GIV Operating Manual Section 11-04-40 or Operational Information Supplement number GIV-OIS-07: Standard Instrument Departure (SID) Climb Performance.**

GIV TAKEOFF GROSS WEIGHT LIMITED BY REQUIRED SID CLIMB GRADIENT

1000 FT AGL, FLAPS 20, ONE ENGINE OPERATING

DELTA ISA TEMP (DEG C)	AIRPORT AMBIENT TEMP (DEG C)	AIRPORT PRESS ALTITUDE (FT)	TAKEOFF GROSS WEIGHT (1000 LB)							
			REQUIRED SID CLIMB GRADIENT (FT/NM)							
			200	300	400	500	600	700	800	900
≤ -5	≤ -20	15,000	54.6	47.8	NA	NA	NA	NA	NA	NA
	≤ -18	14,000	56.6	49.6	NA	NA	NA	NA	NA	NA
	≤ -14	12,000	60.9	53.3	47.4	NA	NA	NA	NA	NA
	≤ -10	10,000	65.3	57.2	51.0	45.8	NA	NA	NA	NA
	≤ -6	8,000	69.9	61.3	54.6	49.2	NA	NA	NA	NA
	≤ -2	6,000	74.6	65.5	58.3	52.6	47.9	NA	NA	NA
	≤ 2	4,000	74.6	70.0	62.3	56.2	51.2	47.0	NA	NA
	≤ 6	2,000	74.6	73.0	65.0	58.5	53.4	49.1	45.3	NA
	≤ 10	0	74.6	74.6	67.4	60.6	55.2	50.8	46.9	NA
0	-15	15,000	54.1	47.4	NA	NA	NA	NA	NA	NA
	-13	14,000	56.2	49.2	NA	NA	NA	NA	NA	NA
	-9	12,000	60.4	52.9	47.0	NA	NA	NA	NA	NA
	-5	10,000	64.8	56.7	50.6	45.5	NA	NA	NA	NA
	-1	8,000	69.5	60.9	54.2	48.9	NA	NA	NA	NA
	3	6,000	74.3	65.1	58.0	52.3	47.6	NA	NA	NA
	7	4,000	74.6	69.6	61.9	55.8	50.9	46.7	NA	NA
	11	2,000	74.6	73.6	65.5	59.0	53.8	49.4	45.6	NA
	15	0	74.6	74.6	67.4	60.6	55.2	50.8	46.9	NA
5	-10	15,000	53.7	47.0	NA	NA	NA	NA	NA	NA
	-8	14,000	55.7	48.8	NA	NA	NA	NA	NA	NA
	-4	12,000	59.8	52.4	46.6	NA	NA	NA	NA	NA
	0	10,000	64.0	56.1	50.0	NA	NA	NA	NA	NA
	4	8,000	68.5	60.1	53.5	48.2	NA	NA	NA	NA
	8	6,000	73.4	64.3	57.2	51.7	47.0	NA	NA	NA
	12	4,000	74.6	69.5	61.8	55.7	50.8	46.6	NA	NA
	16	2,000	74.6	72.8	64.8	58.4	53.2	48.9	45.2	NA
	20	0	74.6	74.6	67.3	60.6	55.2	50.8	46.9	NA
10	-5	15,000	52.8	46.1	NA	NA	NA	NA	NA	NA
	-3	14,000	54.7	47.9	NA	NA	NA	NA	NA	NA
	1	12,000	58.6	51.4	45.6	NA	NA	NA	NA	NA
	5	10,000	62.7	55.0	49.0	NA	NA	NA	NA	NA
	9	8,000	67.2	58.9	52.5	47.3	NA	NA	NA	NA
	13	6,000	72.6	63.7	56.7	51.2	46.5	NA	NA	NA
	17	4,000	74.6	68.2	60.7	54.8	50.0	45.8	NA	NA
	21	2,000	74.6	72.1	64.2	57.8	52.7	48.4	NA	NA
	25	0	74.6	74.6	67.3	60.6	55.2	50.8	46.9	NA

NOTES:
1. Maximum climb weights are limited by the design MAX TOGW of 74,600 lb for the GIV-SP and 73,200 for the GIV.
2. Increase MAX TOGW by 300 lb for each 10 knots of headwind up to a maximum of 40 knots. Data not valid for tailwinds.
3. Cowl anti-ice bleeds are assumed ON for temperatures below 10° C; wing anti-ice bleeds prohibited.

GIV-SP Climb Limited Weights, Flaps 20°, Standard Instrument Departure, ctd… GIV-OIS-07

GIV TAKEOFF GROSS WEIGHT LIMITED BY REQUIRED SID CLIMB GRADIENT

1000 FT AGL, FLAPS 20, ONE ENGINE OPERATING, ctd…

DELTA ISA TEMP (DEG C)	AIRPORT AMBIENT TEMP (DEG C)	AIRPORT PRESS ALTITUDE (FT)	TAKEOFF GROSS WEIGHT (1000 LB)							
			REQUIRED SID CLIMB GRADIENT (FT/NM)							
			200	300	400	500	600	700	800	900
15	0	15,000	51.6	45.0	NA	NA	NA	NA	NA	NA
	2	14,000	53.5	46.8	NA	NA	NA	NA	NA	NA
	6	12,000	57.4	50.3	NA	NA	NA	NA	NA	NA
	10	10,000	61.9	54.3	48.3	NA	NA	NA	NA	NA
	14	8,000	66.4	58.2	51.9	46.7	NA	NA	NA	NA
	18	6,000	71.3	62.5	55.7	50.3	45.7	NA	NA	NA
	22	4,000	74.6	67.0	59.6	53.8	49.1	NA	NA	NA
	26	2,000	74.6	71.4	63.5	57.2	52.2	48.0	NA	NA
	30	0	74.6	74.6	66.9	60.2	54.8	50.4	46.6	NA
20	5	15,000	50.5	NA	NA	NA	NA	NA	NA	NA
	7	14,000	52.3	45.7	NA	NA	NA	NA	NA	NA
	11	12,000	56.6	49.6	NA	NA	NA	NA	NA	NA
	15	10,000	60.7	53.2	47.3	NA	NA	NA	NA	NA
	19	8,000	65.1	57.1	50.9	45.8	NA	NA	NA	NA
	23	6,000	69.9	61.3	54.6	49.3	NA	NA	NA	NA
	27	4,000	74.6	65.5	58.3	52.7	48.0	NA	NA	NA
	31	2,000	74.6	68.7	61.2	55.2	50.4	46.2	NA	NA
	35	0	74.6	71.7	63.9	57.6	52.5	48.2	NA	NA
25	10	15,000	49.7	NA	NA	NA	NA	NA	NA	NA
	12	14,000	51.6	NA	NA	NA	NA	NA	NA	NA
	16	12,000	55.3	48.5	NA	NA	NA	NA	NA	NA
	20	10,000	59.4	52.1	46.3	NA	NA	NA	NA	NA
	24	8,000	63.7	55.9	49.9	NA	NA	NA	NA	NA
	28	6,000	68.4	60.0	53.5	48.3	NA	NA	NA	NA
	32	4,000	71.6	62.8	56.0	50.6	46.0	NA	NA	NA
	36	2,000	74.6	65.5	58.4	52.8	48.1	NA	NA	NA
	40	0	74.6	68.2	60.8	54.9	50.1	45.9	NA	NA
30	15	15,000	48.5	NA	NA	NA	NA	NA	NA	NA
	17	14,000	50.4	NA	NA	NA	NA	NA	NA	NA
	21	12,000	54.2	47.4	NA	NA	NA	NA	NA	NA
	25	10,000	58.1	51.0	45.2	NA	NA	NA	NA	NA
	29	8,000	62.0	54.4	48.5	NA	NA	NA	NA	NA
	33	6,000	65.3	57.3	51.1	46.0	NA	NA	NA	NA
	37	4,000	68.2	59.9	53.5	48.2	NA	NA	NA	NA
	41	2,000	71.0	62.3	55.6	50.2	45.6	NA	NA	NA
	45	0	73.8	64.8	57.8	52.3	47.6	NA	NA	NA

NOTES:
1. Maximum climb weights are limited by the design MAX TOGW of 74,600 lb for the GIV-SP and 73,200 for the GIV.
2. Increase MAX TOGW by 300 lb for each 10 knots of headwind up to a maximum of 40 knots. Data not valid for tailwinds.
3. Cowl anti-ice bleeds are assumed ON for temperatures below 10° C; wing anti-ice bleeds prohibited.

GIV-SP Climb Limited Weights, Flaps 20°, Standard Instrument Departure, ctd… GIV-OIS-07

GIV TAKEOFF GROSS WEIGHT LIMITED BY REQUIRED SID CLIMB GRADIENT

2000 FT AGL, FLAPS 20, ONE ENGINE OPERATING

DELTA ISA TEMP (DEG C)	AIRPORT AMBIENT TEMP (DEG C)	AIRPORT PRESS ALTITUDE (FT)	TAKEOFF GROSS WEIGHT (1000 LB)							
			REQUIRED SID CLIMB GRADIENT (FT/NM)							
			200	300	400	500	600	700	800	900
≤ -5	≤ -20	15,000	53.7	47.1	NA	NA	NA	NA	NA	NA
	≤ -18	14,000	55.7	48.9	NA	NA	NA	NA	NA	NA
	≤ -14	12,000	59.9	52.7	46.9	NA	NA	NA	NA	NA
	≤ -10	10,000	64.3	56.5	50.5	45.5	NA	NA	NA	NA
	≤ -6	8,000	68.8	60.5	54.0	48.8	NA	NA	NA	NA
	≤ -2	6,000	73.6	64.7	57.8	52.2	47.6	NA	NA	NA
	≤ 2	4,000	74.6	69.2	61.7	55.8	51.0	46.8	NA	NA
	≤ 6	2,000	74.6	72.8	65.0	58.5	53.4	49.1	45.3	NA
	≤ 10	0	74.6	74.6	67.4	60.6	55.2	50.8	46.9	NA
0	-15	15,000	53.2	46.7	NA	NA	NA	NA	NA	NA
	-13	14,000	55.2	48.5	NA	NA	NA	NA	NA	NA
	-9	12,000	59.4	52.2	46.5	NA	NA	NA	NA	NA
	-5	10,000	63.8	56.1	50.1	45.1	NA	NA	NA	NA
	-1	8,000	68.4	60.1	53.7	48.5	NA	NA	NA	NA
	3	6,000	73.2	64.3	57.4	52.0	47.4	NA	NA	NA
	7	4,000	74.6	68.8	61.4	55.4	50.7	46.5	NA	NA
	11	2,000	74.6	73.2	65.3	58.9	53.8	49.4	45.6	NA
	15	0	74.6	74.6	67.4	60.6	55.2	50.8	46.9	NA
5	-10	15,000	52.6	46.1	NA	NA	NA	NA	NA	NA
	-8	14,000	54.8	48.1	NA	NA	NA	NA	NA	NA
	-4	12,000	58.9	51.7	46.1	NA	NA	NA	NA	NA
	0	10,000	63.1	55.4	49.5	NA	NA	NA	NA	NA
	4	8,000	67.5	59.3	53.0	47.9	NA	NA	NA	NA
	8	6,000	72.2	63.5	56.7	51.3	46.7	NA	NA	NA
	12	4,000	74.6	68.6	61.2	55.3	50.5	46.4	NA	NA
	16	2,000	74.6	72.5	64.7	58.4	53.2	48.9	45.2	NA
	20	0	74.6	74.6	67.2	60.6	55.2	50.8	46.9	NA
10	-5	15,000	51.5	45.1	NA	NA	NA	NA	NA	NA
	-3	14,000	53.8	47.2	NA	NA	NA	NA	NA	NA
	1	12,000	57.7	50.7	45.1	NA	NA	NA	NA	NA
	5	10,000	61.8	54.3	48.5	NA	NA	NA	NA	NA
	9	8,000	66.1	58.2	52.0	46.9	NA	NA	NA	NA
	13	6,000	71.5	62.9	56.1	50.8	46.3	NA	NA	NA
	17	4,000	74.6	67.4	60.1	54.4	49.7	45.6	NA	NA
	21	2,000	74.6	71.6	63.8	57.7	52.7	48.4	NA	NA
	25	0	74.6	74.6	66.9	60.4	55.1	50.8	46.9	NA

NOTES:

1. Maximum climb weights are limited by the design MAX TOGW of 74,600 lb for the GIV-SP and 73,200 for the GIV.
2. Increase MAX TOGW by 300 lb for each 10 knots of headwind up to a maximum of 40 knots. Data not valid for tailwinds.
3. Cowl anti-ice bleeds are assumed ON for temperatures below 10° C; wing anti-ice bleeds prohibited.

GIV-SP Climb Limited Weights, Flaps 20°, Standard Instrument Departure, ctd… GIV-OIS-07

GIV TAKEOFF GROSS WEIGHT LIMITED BY REQUIRED SID CLIMB GRADIENT

2000 FT AGL, FLAPS 20, ONE ENGINE OPERATING, ctd…

DELTA ISA TEMP (DEG C)	AIRPORT AMBIENT TEMP (DEG C)	AIRPORT PRESS ALTITUDE (FT)	TAKEOFF GROSS WEIGHT (1000 LB)							
			REQUIRED SID CLIMB GRADIENT (FT/NM)							
			200	300	400	500	600	700	800	900
15	0	15,000	50.2	NA	NA	NA	NA	NA	NA	NA
	2	14,000	52.6	46.1	NA	NA	NA	NA	NA	NA
	6	12,000	56.5	49.6	NA	NA	NA	NA	NA	NA
	10	10,000	61.0	53.6	47.9	NA	NA	NA	NA	NA
	14	8,000	65.4	57.5	51.4	46.3	NA	NA	NA	NA
	18	6,000	70.1	61.7	55.1	49.9	45.4	NA	NA	NA
	22	4,000	74.6	66.1	59.0	53.4	48.8	NA	NA	NA
	26	2,000	74.6	70.6	63.0	56.9	52.0	47.8	NA	NA
	30	0	74.6	74.6	66.6	60.1	54.8	50.4	46.6	NA
20	5	15,000	48.7	NA	NA	NA	NA	NA	NA	NA
	7	14,000	51.5	45.0	NA	NA	NA	NA	NA	NA
	11	12,000	55.7	48.9	NA	NA	NA	NA	NA	NA
	15	10,000	59.7	52.5	46.8	NA	NA	NA	NA	NA
	19	8,000	64.0	56.4	50.4	45.4	NA	NA	NA	NA
	23	6,000	68.8	60.5	54.1	48.9	NA	NA	NA	NA
	27	4,000	73.5	64.7	57.8	52.3	47.7	NA	NA	NA
	31	2,000	74.6	68.2	60.9	55.1	50.4	46.2	NA	NA
	35	0	74.6	71.3	63.7	57.5	52.5	48.2	NA	NA
25	10	15,000	47.9	NA	NA	NA	NA	NA	NA	NA
	12	14,000	50.7	NA	NA	NA	NA	NA	NA	NA
	16	12,000	54.5	47.8	NA	NA	NA	NA	NA	NA
	20	10,000	58.5	51.4	45.8	NA	NA	NA	NA	NA
	24	8,000	62.7	55.2	49.3	NA	NA	NA	NA	NA
	28	6,000	67.2	59.2	52.9	47.8	NA	NA	NA	NA
	32	4,000	70.9	62.4	55.8	50.5	46.0	NA	NA	NA
	36	2,000	74.0	65.2	58.2	52.7	48.1	NA	NA	NA
	40	0	74.6	67.9	60.6	54.8	50.1	45.9	NA	NA
30	15	15,000	46.4	NA	NA	NA	NA	NA	NA	NA
	17	14,000	49.5	NA	NA	NA	NA	NA	NA	NA
	21	12,000	53.3	46.7	NA	NA	NA	NA	NA	NA
	25	10,000	57.2	50.3	NA	NA	NA	NA	NA	NA
	29	8,000	61.2	53.9	48.1	NA	NA	NA	NA	NA
	33	6,000	64.6	56.9	50.9	45.9	NA	NA	NA	NA
	37	4,000	67.6	59.5	53.3	48.1	NA	NA	NA	NA
	41	2,000	70.4	62.0	55.5	50.2	45.6	NA	NA	NA
	45	0	73.2	64.5	57.7	52.3	47.6	NA	NA	NA

NOTES:
1. Maximum climb weights are limited by the design MAX TOGW of 74,600 lb for the GIV-SP and 73,200 for the GIV.
2. Increase MAX TOGW by 300 lb for each 10 knots of headwind up to a maximum of 40 knots. Data not valid for tailwinds.
3. Cowl anti-ice bleeds are assumed ON for temperatures below 10° C; wing anti-ice bleeds prohibited.

GIV-SP Climb Limited Weights, Flaps 20°, Standard Instrument Departure, ctd… GIV-OIS-07

GIV TAKEOFF GROSS WEIGHT LIMITED BY REQUIRED SID CLIMB GRADIENT

3000 FT AGL, FLAPS 20, ONE ENGINE OPERATING

DELTA ISA TEMP (DEG C)	AIRPORT AMBIENT TEMP (DEG C)	AIRPORT PRESS ALTITUDE (FT)	TAKEOFF GROSS WEIGHT (1000 LB) REQUIRED SID CLIMB GRADIENT (FT/NM) 200	300	400	500	600	700	800	900
≤ -5	≤ -20	15,000	52.7	46.3	NA	NA	NA	NA	NA	NA
	≤ -18	14,000	54.7	48.1	NA	NA	NA	NA	NA	NA
	≤ -14	12,000	58.9	51.8	46.2	NA	NA	NA	NA	NA
	≤ -10	10,000	63.2	55.6	49.7	NA	NA	NA	NA	NA
	≤ -6	8,000	67.7	59.6	53.3	48.1	NA	NA	NA	NA
	≤ -2	6,000	72.4	63.8	57.0	51.6	47.0	NA	NA	NA
	≤ 2	4,000	74.6	68.1	60.9	55.0	50.3	46.2	NA	NA
	≤ 6	2,000	74.6	71.7	64.1	57.9	52.9	48.7	45.0	NA
	≤ 10	0	74.6	74.6	67.0	60.5	55.2	50.8	46.9	NA
0	-15	15,000	52.3	45.8	NA	NA	NA	NA	NA	NA
	-13	14,000	54.3	47.7	NA	NA	NA	NA	NA	NA
	-9	12,000	58.4	51.4	45.8	NA	NA	NA	NA	NA
	-5	10,000	62.7	55.2	49.3	NA	NA	NA	NA	NA
	-1	8,000	67.2	59.1	52.9	47.8	NA	NA	NA	NA
	3	6,000	72.0	63.3	56.6	51.3	46.7	NA	NA	NA
	7	4,000	74.6	67.7	60.5	54.7	50.0	45.9	NA	NA
	11	2,000	74.6	72.1	64.4	58.2	53.2	48.9	45.2	NA
	15	0	74.6	74.6	67.0	60.5	55.2	50.8	46.9	NA
5	-10	15,000	51.5	45.2	NA	NA	NA	NA	NA	NA
	-8	14,000	53.7	47.1	NA	NA	NA	NA	NA	NA
	-4	12,000	57.8	50.9	45.3	NA	NA	NA	NA	NA
	0	10,000	62.0	54.6	48.8	NA	NA	NA	NA	NA
	4	8,000	66.3	58.4	52.2	47.2	NA	NA	NA	NA
	8	6,000	71.1	62.6	55.9	50.6	46.1	NA	NA	NA
	12	4,000	74.6	67.5	60.3	54.6	49.9	45.8	NA	NA
	16	2,000	74.6	71.4	63.8	57.6	52.7	48.5	NA	NA
	20	0	74.6	74.6	66.6	60.1	54.9	50.6	46.8	NA
10	-5	15,000	50.2	NA	NA	NA	NA	NA	NA	NA
	-3	14,000	52.5	46.0	NA	NA	NA	NA	NA	NA
	1	12,000	56.7	49.9	NA	NA	NA	NA	NA	NA
	5	10,000	60.8	53.5	47.8	NA	NA	NA	NA	NA
	9	8,000	65.0	57.3	51.2	46.2	NA	NA	NA	NA
	13	6,000	70.3	61.9	55.3	50.1	45.6	NA	NA	NA
	17	4,000	74.6	66.3	59.2	53.6	49.0	NA	NA	NA
	21	2,000	74.6	70.5	63.0	56.9	52.0	47.9	NA	NA
	25	0	74.6	74.1	66.2	59.8	54.6	50.3	46.6	NA

NOTES:
1. Maximum climb weights are limited by the design MAX TOGW of 74,600 lb for the GIV-SP and 73,200 for the GIV.
2. Increase MAX TOGW by 300 lb for each 10 knots of headwind up to a maximum of 40 knots. Data not valid for tailwinds.
3. Cowl anti-ice bleeds are assumed ON for temperatures below 10° C; wing anti-ice bleeds prohibited.

GIV-SP Climb Limited Weights, Flaps 20°, Standard Instrument Departure, ctd… GIV-OIS-07

GIV TAKEOFF GROSS WEIGHT LIMITED BY REQUIRED SID CLIMB GRADIENT

3000 FT AGL, FLAPS 20, ONE ENGINE OPERATING, ctd…

DELTA ISA TEMP (DEG C)	AIRPORT AMBIENT TEMP (DEG C)	AIRPORT PRESS ALTITUDE (FT)	TAKEOFF GROSS WEIGHT (1000 LB)							
			REQUIRED SID CLIMB GRADIENT (FT/NM)							
			200	300	400	500	600	700	800	900
15	0	15,000	48.6	NA	NA	NA	NA	NA	NA	NA
	2	14,000	51.1	NA	NA	NA	NA	NA	NA	NA
	6	12,000	55.5	48.9	NA	NA	NA	NA	NA	NA
	10	10,000	60.0	52.8	47.1	NA	NA	NA	NA	NA
	14	8,000	64.3	56.6	50.6	45.7	NA	NA	NA	NA
	18	6,000	68.9	60.7	54.3	49.1	NA	NA	NA	NA
	22	4,000	73.9	65.1	58.2	52.7	48.1	NA	NA	NA
	26	2,000	74.6	69.6	62.1	56.2	51.4	47.2	NA	NA
	30	0	74.6	73.6	65.7	59.4	54.2	50.0	46.2	NA
20	5	15,000	46.9	NA	NA	NA	NA	NA	NA	NA
	7	14,000	49.7	NA	NA	NA	NA	NA	NA	NA
	11	12,000	54.8	48.2	NA	NA	NA	NA	NA	NA
	15	10,000	58.7	51.7	46.1	NA	NA	NA	NA	NA
	19	8,000	63.0	55.5	49.6	NA	NA	NA	NA	NA
	23	6,000	67.6	59.5	53.3	48.2	NA	NA	NA	NA
	27	4,000	72.3	63.7	56.9	51.6	47.0	NA	NA	NA
	31	2,000	74.6	67.4	60.2	54.5	49.9	45.8	NA	NA
	35	0	74.6	70.6	63.1	57.1	52.2	48.0	NA	NA
25	10	15,000	45.9	NA	NA	NA	NA	NA	NA	NA
	12	14,000	48.8	NA	NA	NA	NA	NA	NA	NA
	16	12,000	53.5	47.0	NA	NA	NA	NA	NA	NA
	20	10,000	57.4	50.6	45.0	NA	NA	NA	NA	NA
	24	8,000	61.7	54.4	48.6	NA	NA	NA	NA	NA
	28	6,000	66.0	58.2	52.1	47.1	NA	NA	NA	NA
	32	4,000	70.1	61.7	55.2	50.0	45.6	NA	NA	NA
	36	2,000	73.2	64.5	57.7	52.3	47.7	NA	NA	NA
	40	0	74.6	67.3	60.1	54.5	49.8	45.7	NA	NA
30	15	15,000	NA	NA	NA	NA	NA	NA	NA	NA
	17	14,000	47.3	NA	NA	NA	NA	NA	NA	NA
	21	12,000	52.4	46.0	NA	NA	NA	NA	NA	NA
	25	10,000	56.3	49.6	NA	NA	NA	NA	NA	NA
	29	8,000	60.1	53.0	47.3	NA	NA	NA	NA	NA
	33	6,000	63.7	56.1	50.3	45.3	NA	NA	NA	NA
	37	4,000	66.8	58.9	52.8	47.7	NA	NA	NA	NA
	41	2,000	69.7	61.4	55.0	49.8	45.4	NA	NA	NA
	45	0	72.5	63.9	57.2	51.9	47.3	NA	NA	NA

NOTES:

1. Maximum climb weights are limited by the design MAX TOGW of 74,600 lb for the GIV-SP and 73,200 for the GIV.
2. Increase MAX TOGW by 300 lb for each 10 knots of headwind up to a maximum of 40 knots. Data not valid for tailwinds.
3. Cowl anti-ice bleeds are assumed ON for temperatures below 10° C; wing anti-ice bleeds prohibited.

GIV-SP Climb Limited Weights, Flaps 20°, Standard Instrument Departure, ctd… GIV-OIS-07

GIV TAKEOFF GROSS WEIGHT LIMITED BY REQUIRED SID CLIMB GRADIENT

4000 FT AGL, FLAPS 20, ONE ENGINE OPERATING

DELTA ISA TEMP (DEG C)	AIRPORT AMBIENT TEMP (DEG C)	AIRPORT PRESS ALTITUDE (FT)	TAKEOFF GROSS WEIGHT (1000 LB) REQUIRED SID CLIMB GRADIENT (FT/NM) 200	300	400	500	600	700	800	900
≤ -5	≤ -20	15,000	51.9	45.6	NA	NA	NA	NA	NA	NA
	≤ -18	14,000	53.8	47.3	NA	NA	NA	NA	NA	NA
	≤ -14	12,000	57.9	51.0	45.5	NA	NA	NA	NA	NA
	≤ -10	10,000	62.2	54.8	49.0	NA	NA	NA	NA	NA
	≤ -6	8,000	66.7	58.7	52.6	47.5	NA	NA	NA	NA
	≤ -2	6,000	71.3	62.9	56.2	50.9	46.4	NA	NA	NA
	≤ 2	4,000	74.6	67.2	60.1	54.4	49.7	45.7	NA	NA
	≤ 6	2,000	74.6	70.7	63.2	57.2	52.3	48.2	NA	NA
	≤ 10	0	74.6	74.6	66.8	60.3	55.1	50.8	46.9	NA
0	-15	15,000	51.6	45.2	NA	NA	NA	NA	NA	NA
	-13	14,000	53.4	46.9	NA	NA	NA	NA	NA	NA
	-9	12,000	57.5	50.6	45.1	NA	NA	NA	NA	NA
	-5	10,000	61.7	54.4	48.6	NA	NA	NA	NA	NA
	-1	8,000	66.2	58.3	52.2	47.2	NA	NA	NA	NA
	3	6,000	70.9	62.5	55.8	50.6	46.1	NA	NA	NA
	7	4,000	74.6	66.8	59.7	54.1	49.4	45.4	NA	NA
	11	2,000	74.6	71.1	63.5	57.5	52.6	48.4	NA	NA
	15	0	74.6	74.5	66.6	60.1	54.9	50.7	46.9	NA
5	-10	15,000	50.8	NA	NA	NA	NA	NA	NA	NA
	-8	14,000	52.6	46.2	NA	NA	NA	NA	NA	NA
	-4	12,000	56.9	50.2	NA	NA	NA	NA	NA	NA
	0	10,000	61.1	53.8	48.1	NA	NA	NA	NA	NA
	4	8,000	65.4	57.6	51.6	46.6	NA	NA	NA	NA
	8	6,000	70.0	61.7	55.1	50.0	45.5	NA	NA	NA
	12	4,000	74.6	66.5	59.5	53.9	49.2	45.2	NA	NA
	16	2,000	74.6	70.4	62.9	56.9	52.1	47.9	NA	NA
	20	0	74.6	74.1	66.2	59.8	54.7	50.4	46.7	NA
10	-5	15,000	49.5	NA	NA	NA	NA	NA	NA	NA
	-3	14,000	51.2	NA	NA	NA	NA	NA	NA	NA
	1	12,000	55.8	49.2	NA	NA	NA	NA	NA	NA
	5	10,000	59.9	52.8	47.1	NA	NA	NA	NA	NA
	9	8,000	64.1	56.5	50.6	45.6	NA	NA	NA	NA
	13	6,000	69.3	61.0	54.6	49.5	45.0	NA	NA	NA
	17	4,000	74.1	65.3	58.5	53.0	48.4	NA	NA	NA
	21	2,000	74.6	69.5	62.1	56.2	51.4	47.3	NA	NA
	25	0	74.6	73.4	65.6	59.3	54.2	50.0	46.2	NA

NOTES:
1. Maximum climb weights are limited by the design MAX TOGW of 74,600 lb for the GIV-SP and 73,200 for the GIV.
2. Increase MAX TOGW by 300 lb for each 10 knots of headwind up to a maximum of 40 knots. Data not valid for tailwinds.
3. Cowl anti-ice bleeds are assumed ON for temperatures below 10° C; wing anti-ice bleeds prohibited.

GIV-SP Climb Limited Weights, Flaps 20°, Standard Instrument Departure, ctd… GIV-OIS-07

GIV TAKEOFF GROSS WEIGHT LIMITED BY REQUIRED SID CLIMB GRADIENT

4000 FT AGL, FLAPS 20, ONE ENGINE OPERATING, ctd…

DELTA ISA TEMP (DEG C)	AIRPORT AMBIENT TEMP (DEG C)	AIRPORT PRESS ALTITUDE (FT)	TAKEOFF GROSS WEIGHT (1000 LB) REQUIRED SID CLIMB GRADIENT (FT/NM) 200	300	400	500	600	700	800	900
15	0	15,000	48.0	NA	NA	NA	NA	NA	NA	NA
	2	14,000	49.6	NA	NA	NA	NA	NA	NA	NA
	6	12,000	54.7	48.1	NA	NA	NA	NA	NA	NA
	10	10,000	59.1	52.1	46.5	NA	NA	NA	NA	NA
	14	8,000	63.3	55.8	50.0	45.0	NA	NA	NA	NA
	18	6,000	67.9	59.9	53.6	48.5	NA	NA	NA	NA
	22	4,000	72.7	64.1	57.4	52.0	47.5	NA	NA	NA
	26	2,000	74.6	68.5	61.3	55.5	50.8	46.7	NA	NA
	30	0	74.6	72.6	64.9	58.7	53.7	49.4	45.7	NA
20	5	15,000	46.3	NA	NA	NA	NA	NA	NA	NA
	7	14,000	47.9	NA	NA	NA	NA	NA	NA	NA
	11	12,000	53.9	47.4	NA	NA	NA	NA	NA	NA
	15	10,000	57.8	51.0	45.5	NA	NA	NA	NA	NA
	19	8,000	62.0	54.7	48.9	NA	NA	NA	NA	NA
	23	6,000	66.5	58.7	52.6	47.5	NA	NA	NA	NA
	27	4,000	71.1	62.7	56.1	50.9	46.4	NA	NA	NA
	31	2,000	74.6	66.5	59.5	53.9	49.3	45.2	NA	NA
	35	0	74.6	70.0	62.6	56.7	51.8	47.7	NA	NA
25	10	15,000	45.4	NA	NA	NA	NA	NA	NA	NA
	12	14,000	47.0	NA	NA	NA	NA	NA	NA	NA
	16	12,000	52.7	46.3	NA	NA	NA	NA	NA	NA
	20	10,000	56.6	49.9	NA	NA	NA	NA	NA	NA
	24	8,000	60.8	53.6	47.9	NA	NA	NA	NA	NA
	28	6,000	65.0	57.4	51.4	46.4	NA	NA	NA	NA
	32	4,000	68.9	60.8	54.4	49.3	NA	NA	NA	NA
	36	2,000	72.5	64.0	57.3	52.0	47.4	NA	NA	NA
	40	0	74.6	66.7	59.7	54.1	49.5	45.5	NA	NA
30	15	15,000	NA	NA	NA	NA	NA	NA	NA	NA
	17	14,000	45.2	NA	NA	NA	NA	NA	NA	NA
	21	12,000	51.5	45.2	NA	NA	NA	NA	NA	NA
	25	10,000	55.3	48.8	NA	NA	NA	NA	NA	NA
	29	8,000	59.2	52.2	46.6	NA	NA	NA	NA	NA
	33	6,000	62.8	55.4	49.7	NA	NA	NA	NA	NA
	37	4,000	66.1	58.3	52.3	47.3	NA	NA	NA	NA
	41	2,000	69.0	60.9	54.6	49.5	45.1	NA	NA	NA
	45	0	71.9	63.5	56.9	51.6	47.1	NA	NA	NA

NOTES:

1. Maximum climb weights are limited by the design MAX TOGW of 74,600 lb for the GIV-SP and 73,200 for the GIV.
2. Increase MAX TOGW by 300 lb for each 10 knots of headwind up to a maximum of 40 knots. Data not valid for tailwinds.
3. Cowl anti-ice bleeds are assumed ON for temperatures below 10° C; wing anti-ice bleeds prohibited.

GIV-SP Climb Limited Weights, Flaps 20°, Standard Instrument Departure, ctd… GIV-OIS-07

GIV TAKEOFF GROSS WEIGHT LIMITED BY REQUIRED SID CLIMB GRADIENT

5000 FT AGL, FLAPS 20, ONE ENGINE OPERATING

DELTA ISA TEMP (DEG C)	AIRPORT AMBIENT TEMP (DEG C)	AIRPORT PRESS ALTITUDE (FT)	TAKEOFF GROSS WEIGHT (1000 LB)							
			REQUIRED SID CLIMB GRADIENT (FT/NM)							
			200	300	400	500	600	700	800	900
≤ -5	≤ -20	15,000	51.6	NA	NA	NA	NA	NA	NA	NA
	≤ -18	14,000	53.0	46.6	NA	NA	NA	NA	NA	NA
	≤ -14	12,000	56.9	50.2	NA	NA	NA	NA	NA	NA
	≤ -10	10,000	61.4	53.9	48.2	NA	NA	NA	NA	NA
	≤ -6	8,000	65.7	57.8	51.7	46.7	NA	NA	NA	NA
	≤ -2	6,000	70.2	61.9	55.3	50.1	45.7	NA	NA	NA
	≤ 2	4,000	74.6	66.2	59.2	53.6	49.0	NA	NA	NA
	≤ 6	2,000	74.6	69.6	62.2	56.3	51.5	47.4	NA	NA
	≤ 10	0	74.6	73.5	65.7	59.4	54.3	50.0	46.3	NA
0	-15	15,000	50.9	NA	NA	NA	NA	NA	NA	NA
	-13	14,000	52.6	46.2	NA	NA	NA	NA	NA	NA
	-9	12,000	56.9	49.7	NA	NA	NA	NA	NA	NA
	-5	10,000	60.7	53.5	47.8	NA	NA	NA	NA	NA
	-1	8,000	65.4	57.4	51.3	46.4	NA	NA	NA	NA
	3	6,000	69.9	61.4	54.9	49.8	45.3	NA	NA	NA
	7	4,000	74.6	65.7	58.8	53.2	48.6	NA	NA	NA
	11	2,000	74.6	70.0	62.5	56.6	51.8	47.6	NA	NA
	15	0	74.6	73.3	65.5	59.2	54.1	49.9	46.1	NA
5	-10	15,000	50.8	NA	NA	NA	NA	NA	NA	NA
	-8	14,000	51.8	45.5	NA	NA	NA	NA	NA	NA
	-4	12,000	55.8	49.1	NA	NA	NA	NA	NA	NA
	0	10,000	60.5	52.9	47.3	NA	NA	NA	NA	NA
	4	8,000	64.6	56.7	50.7	45.8	NA	NA	NA	NA
	8	6,000	68.9	60.7	54.3	49.2	NA	NA	NA	NA
	12	4,000	74.5	65.5	58.6	53.1	48.5	NA	NA	NA
	16	2,000	74.6	69.2	61.9	56.0	51.3	47.1	NA	NA
	20	0	74.6	72.9	65.2	58.9	53.8	49.6	45.9	NA
10	-5	15,000	48.9	NA	NA	NA	NA	NA	NA	NA
	-3	14,000	50.5	NA	NA	NA	NA	NA	NA	NA
	1	12,000	54.9	48.0	NA	NA	NA	NA	NA	NA
	5	10,000	58.9	51.9	46.3	NA	NA	NA	NA	NA
	9	8,000	63.4	55.6	49.8	NA	NA	NA	NA	NA
	13	6,000	68.4	60.1	53.7	48.7	NA	NA	NA	NA
	17	4,000	72.9	64.3	57.5	52.1	47.6	NA	NA	NA
	21	2,000	74.6	68.3	61.1	55.3	50.6	46.5	NA	NA
	25	0	74.6	72.3	64.6	58.4	53.4	49.2	45.5	NA

NOTES:
1. Maximum climb weights are limited by the design MAX TOGW of 74,600 lb for the GIV-SP and 73,200 for the GIV.
2. Increase MAX TOGW by 300 lb for each 10 knots of headwind up to a maximum of 40 knots. Data not valid for tailwinds.
3. Cowl anti-ice bleeds are assumed ON for temperatures below 10° C; wing anti-ice bleeds prohibited.

GIV-SP Climb Limited Weights, Flaps 20°, Standard Instrument Departure, ctd… GIV-OIS-07

GIV TAKEOFF GROSS WEIGHT LIMITED BY REQUIRED SID CLIMB GRADIENT

5000 FT AGL, FLAPS 20, ONE ENGINE OPERATING, ctd…

DELTA ISA TEMP (DEG C)	AIRPORT AMBIENT TEMP (DEG C)	AIRPORT PRESS ALTITUDE (FT)	TAKEOFF GROSS WEIGHT (1000 LB) REQUIRED SID CLIMB GRADIENT (FT/NM) 200	300	400	500	600	700	800	900
15	0	15,000	47.4	NA	NA	NA	NA	NA	NA	NA
	2	14,000	49.0	NA	NA	NA	NA	NA	NA	NA
	6	12,000	53.6	46.7	NA	NA	NA	NA	NA	NA
	10	10,000	58.6	51.3	45.7	NA	NA	NA	NA	NA
	14	8,000	62.7	54.9	49.2	NA	NA	NA	NA	NA
	18	6,000	66.8	58.9	52.7	47.7	NA	NA	NA	NA
	22	4,000	71.7	63.1	56.4	51.2	46.7	NA	NA	NA
	26	2,000	74.6	67.4	60.3	54.6	49.9	45.9	NA	NA
	30	0	74.6	71.5	63.9	57.8	52.9	48.7	45.0	NA
20	5	15,000	45.7	NA	NA	NA	NA	NA	NA	NA
	7	14,000	47.3	NA	NA	NA	NA	NA	NA	NA
	11	12,000	52.8	45.9	NA	NA	NA	NA	NA	NA
	15	10,000	56.9	50.2	NA	NA	NA	NA	NA	NA
	19	8,000	61.3	53.8	48.1	NA	NA	NA	NA	NA
	23	6,000	65.7	57.7	51.7	46.7	NA	NA	NA	NA
	27	4,000	70.0	61.7	55.2	50.1	45.6	NA	NA	NA
	31	2,000	74.0	65.4	58.5	53.1	48.5	NA	NA	NA
	35	0	74.6	69.1	61.8	55.9	51.2	47.1	NA	NA
25	10	15,000	NA	NA	NA	NA	NA	NA	NA	NA
	12	14,000	46.4	NA	NA	NA	NA	NA	NA	NA
	16	12,000	50.8	NA	NA	NA	NA	NA	NA	NA
	20	10,000	55.7	49.1	NA	NA	NA	NA	NA	NA
	24	8,000	59.7	52.7	47.1	NA	NA	NA	NA	NA
	28	6,000	64.0	56.4	50.6	45.6	NA	NA	NA	NA
	32	4,000	67.6	59.7	53.5	48.4	NA	NA	NA	NA
	36	2,000	71.4	63.2	56.6	51.3	46.8	NA	NA	NA
	40	0	74.3	66.0	59.1	53.6	49.0	NA	NA	NA
30	15	15,000	NA	NA	NA	NA	NA	NA	NA	NA
	17	14,000	NA	NA	NA	NA	NA	NA	NA	NA
	21	12,000	49.9	NA	NA	NA	NA	NA	NA	NA
	25	10,000	54.8	48.0	NA	NA	NA	NA	NA	NA
	29	8,000	58.4	51.4	45.8	NA	NA	NA	NA	NA
	33	6,000	61.7	54.5	48.8	NA	NA	NA	NA	NA
	37	4,000	64.9	57.5	51.6	46.6	NA	NA	NA	NA
	41	2,000	67.6	60.2	54.0	48.9	NA	NA	NA	NA
	45	0	70.3	62.8	56.3	51.1	46.6	NA	NA	NA

NOTES:
1. Maximum climb weights are limited by the design MAX TOGW of 74,600 lb for the GIV-SP and 73,200 for the GIV.
2. Increase MAX TOGW by 300 lb for each 10 knots of headwind up to a maximum of 40 knots. Data not valid for tailwinds.
3. Cowl anti-ice bleeds are assumed ON for temperatures below 10° C; wing anti-ice bleeds prohibited.

GIV-SP Climb Limited Weights, Flaps 20°, Standard Instrument Departure, ctd… GIV-OIS-07

GIV TAKEOFF GROSS WEIGHT LIMITED BY REQUIRED SID CLIMB GRADIENT

6000 FT AGL, FLAPS 20, ONE ENGINE OPERATING

DELTA ISA TEMP (DEG C)	AIRPORT AMBIENT TEMP (DEG C)	AIRPORT PRESS ALTITUDE (FT)	TAKEOFF GROSS WEIGHT (1000 LB)							
			REQUIRED SID CLIMB GRADIENT (FT/NM)							
			200	300	400	500	600	700	800	900
	≤ -20	15,000	48.1	NA	NA	NA	NA	NA	NA	NA
	≤ -18	14,000	49.7	45.8	NA	NA	NA	NA	NA	NA
	≤ -14	12,000	53.1	49.3	NA	NA	NA	NA	NA	NA
	≤ -10	10,000	56.8	53.0	47.3	NA	NA	NA	NA	NA
≤ -5	≤ -6	8,000	60.8	56.8	50.9	45.9	NA	NA	NA	NA
	≤ -2	6,000	65.0	60.9	54.4	49.3	NA	NA	NA	NA
	≤ 2	4,000	69.4	65.1	58.2	52.8	48.2	NA	NA	NA
	≤ 6	2,000	72.6	68.5	61.2	55.4	50.7	46.6	NA	NA
	≤ 10	0	74.6	72.2	64.6	58.4	53.4	49.2	45.5	NA
	-15	15,000	47.9	NA	NA	NA	NA	NA	NA	NA
	-13	14,000	49.6	45.6	NA	NA	NA	NA	NA	NA
	-9	12,000	52.8	48.9	NA	NA	NA	NA	NA	NA
	-5	10,000	56.5	52.6	47.0	NA	NA	NA	NA	NA
0	-1	8,000	60.5	56.4	50.5	45.6	NA	NA	NA	NA
	3	6,000	64.7	60.5	54.1	49.0	NA	NA	NA	NA
	7	4,000	69.0	64.7	57.8	52.4	47.9	NA	NA	NA
	11	2,000	73.3	68.8	61.5	55.7	51.0	46.9	NA	NA
	15	0	74.6	72.1	64.4	58.3	53.3	49.1	45.4	NA
	-10	15,000	47.5	NA	NA	NA	NA	NA	NA	NA
	-8	14,000	49.1	NA	NA	NA	NA	NA	NA	NA
	-4	12,000	52.1	48.1	NA	NA	NA	NA	NA	NA
	0	10,000	56.0	52.1	46.4	NA	NA	NA	NA	NA
5	4	8,000	59.9	55.8	49.9	45.0	NA	NA	NA	NA
	8	6,000	64.0	59.8	53.5	48.4	NA	NA	NA	NA
	12	4,000	69.1	64.5	57.7	52.3	47.7	NA	NA	NA
	16	2,000	72.6	68.1	60.9	55.1	50.4	46.4	NA	NA
	20	0	74.6	71.7	64.1	58.0	53.0	48.8	45.1	NA
	-5	15,000	46.4	NA	NA	NA	NA	NA	NA	NA
	-3	14,000	47.9	NA	NA	NA	NA	NA	NA	NA
	1	12,000	50.7	46.8	NA	NA	NA	NA	NA	NA
	5	10,000	54.9	51.1	45.5	NA	NA	NA	NA	NA
10	9	8,000	58.7	54.7	49.0	NA	NA	NA	NA	NA
	13	6,000	63.4	59.1	52.9	47.9	NA	NA	NA	NA
	17	4,000	67.7	63.3	56.6	51.3	46.8	NA	NA	NA
	21	2,000	71.7	67.2	60.1	54.4	49.8	45.7	NA	NA
	25	0	74.6	71.1	63.5	57.5	52.6	48.4	NA	NA

NOTES:

1. Maximum climb weights are limited by the design MAX TOGW of 74,600 lb for the GIV-SP and 73,200 for the GIV.
2. Increase MAX TOGW by 300 lb for each 10 knots of headwind up to a maximum of 40 knots. Data not valid for tailwinds.
3. Cowl anti-ice bleeds are assumed ON for temperatures below 10° C; wing anti-ice bleeds prohibited.

GIV-SP Climb Limited Weights, Flaps 20°, Standard Instrument Departure, ctd… GIV-OIS-07

GIV TAKEOFF GROSS WEIGHT LIMITED BY REQUIRED SID CLIMB GRADIENT

6000 FT AGL, FLAPS 20, ONE ENGINE OPERATING, ctd…

DELTA ISA TEMP (DEG C)	AIRPORT AMBIENT TEMP (DEG C)	AIRPORT PRESS ALTITUDE (FT)	TAKEOFF GROSS WEIGHT (1000 LB)							
			REQUIRED SID CLIMB GRADIENT (FT/NM)							
			200	300	400	500	600	700	800	900
15	0	15,000	45.1	NA	NA	NA	NA	NA	NA	NA
	2	14,000	46.6	NA	NA	NA	NA	NA	NA	NA
	6	12,000	49.3	45.3	NA	NA	NA	NA	NA	NA
	10	10,000	54.3	50.4	NA	NA	NA	NA	NA	NA
	14	8,000	58.1	54.1	48.4	NA	NA	NA	NA	NA
	18	6,000	62.2	58.0	51.9	46.9	NA	NA	NA	NA
	22	4,000	66.4	62.0	55.5	50.3	45.9	NA	NA	NA
	26	2,000	70.8	66.3	59.3	53.7	49.1	45.1	NA	NA
	30	0	74.6	70.4	62.9	56.9	52.1	47.9	NA	NA
20	5	15,000	NA	NA	NA	NA	NA	NA	NA	NA
	7	14,000	45.1	NA	NA	NA	NA	NA	NA	NA
	11	12,000	48.5	NA	NA	NA	NA	NA	NA	NA
	15	10,000	53.3	49.4	NA	NA	NA	NA	NA	NA
	19	8,000	56.9	53.0	47.4	NA	NA	NA	NA	NA
	23	6,000	60.9	56.8	50.9	45.9	NA	NA	NA	NA
	27	4,000	64.8	60.7	54.4	49.2	NA	NA	NA	NA
	31	2,000	68.4	64.3	57.5	52.2	47.6	NA	NA	NA
	35	0	72.3	68.0	60.8	55.1	50.4	46.3	NA	NA
25	10	15,000	NA	NA	NA	NA	NA	NA	NA	NA
	12	14,000	NA	NA	NA	NA	NA	NA	NA	NA
	16	12,000	46.9	NA	NA	NA	NA	NA	NA	NA
	20	10,000	52.2	48.2	NA	NA	NA	NA	NA	NA
	24	8,000	55.6	51.9	46.3	NA	NA	NA	NA	NA
	28	6,000	59.4	55.5	49.7	NA	NA	NA	NA	NA
	32	4,000	62.5	58.7	52.7	47.6	NA	NA	NA	NA
	36	2,000	65.9	62.1	55.6	50.5	46.0	NA	NA	NA
	40	0	69.2	65.3	58.5	53.0	48.5	NA	NA	NA
30	15	15,000	NA	NA	NA	NA	NA	NA	NA	NA
	17	14,000	NA	NA	NA	NA	NA	NA	NA	NA
	21	12,000	45.4	NA	NA	NA	NA	NA	NA	NA
	25	10,000	51.1	47.1	NA	NA	NA	NA	NA	NA
	29	8,000	54.2	50.5	NA	NA	NA	NA	NA	NA
	33	6,000	57.2	53.6	48.0	NA	NA	NA	NA	NA
	37	4,000	60.1	56.7	50.9	45.9	NA	NA	NA	NA
	41	2,000	62.8	59.5	53.4	48.3	NA	NA	NA	NA
	45	0	65.4	62.2	55.8	50.6	46.1	NA	NA	NA

NOTES:
1. Maximum climb weights are limited by the design MAX TOGW of 74,600 lb for the GIV-SP and 73,200 for the GIV.
2. Increase MAX TOGW by 300 lb for each 10 knots of headwind up to a maximum of 40 knots. Data not valid for tailwinds.
3. Cowl anti-ice bleeds are assumed ON for temperatures below 10° C; wing anti-ice bleeds prohibited.

GIV-SP Takeoff Climb Requirements: Climb Limited Weights: Flaps 10° - Standard Instrument Departure

GIV-OIS-07

(SN 1214 and subs and SN 1000 thru 1213 with ASC 190)

NOTE: For complete text and examples, see **GIV Operating Manual Section 11-04-40 or Operational Information Supplement number GIV-OIS-07: Standard Instrument Departure (SID) Climb Performance.**

GIV TAKEOFF GROSS WEIGHT LIMITED BY REQUIRED SID CLIMB GRADIENT

1000 FT AGL, FLAPS 10, ONE ENGINE OPERATING

DELTA ISA TEMP (DEG C)	AIRPORT AMBIENT TEMP (DEG C)	AIRPORT PRESS ALTITUDE (FT)	TAKEOFF GROSS WEIGHT (1000 LB)							
			REQUIRED SID CLIMB GRADIENT (FT/NM)							
			200	300	400	500	600	700	800	900
≤ -5	≤ -20	15,000	60.1	52.0	45.9	NA	NA	NA	NA	NA
	≤ -18	14,000	62.3	53.9	47.6	NA	NA	NA	NA	NA
	≤ -14	12,000	66.9	57.9	51.1	45.8	NA	NA	NA	NA
	≤ -10	10,000	71.7	62.1	54.8	49.0	NA	NA	NA	NA
	≤ -6	8,000	74.6	66.4	58.6	52.5	47.6	NA	NA	NA
	≤ -2	6,000	74.6	70.9	62.6	56.0	50.7	46.6	NA	NA
	≤ 2	4,000	74.6	74.6	66.8	59.9	54.2	49.6	45.9	NA
	≤ 6	2,000	74.6	74.6	69.7	62.4	56.4	51.7	47.7	NA
	≤ 10	0	74.6	74.6	72.2	64.7	58.5	53.5	49.4	45.9
0	-15	15,000	59.6	51.6	45.5	NA	NA	NA	NA	NA
	-13	14,000	61.8	53.5	47.2	NA	NA	NA	NA	NA
	-9	12,000	66.4	57.5	50.7	45.4	NA	NA	NA	NA
	-5	10,000	71.1	61.6	54.3	48.7	NA	NA	NA	NA
	-1	8,000	74.6	65.9	58.2	52.1	47.3	NA	NA	NA
	3	6,000	74.6	70.5	62.2	55.7	50.5	46.3	NA	NA
	7	4,000	74.6	74.6	66.4	59.5	53.8	49.3	45.6	NA
	11	2,000	74.6	74.6	70.2	62.9	56.9	52.0	48.1	NA
	15	0	74.6	74.6	72.2	64.7	58.5	53.4	49.3	45.9
5	-10	15,000	59.1	51.1	45.1	NA	NA	NA	NA	NA
	-8	14,000	61.3	53.0	46.8	NA	NA	NA	NA	NA
	-4	12,000	65.7	56.9	50.2	NA	NA	NA	NA	NA
	0	10,000	70.3	60.8	53.7	48.1	NA	NA	NA	NA
	4	8,000	74.6	65.1	57.4	51.4	46.7	NA	NA	NA
	8	6,000	74.6	69.6	61.4	55.0	49.8	45.7	NA	NA
	12	4,000	74.6	74.6	66.3	59.4	53.7	49.2	45.5	NA
	16	2,000	74.6	74.6	69.5	62.2	56.3	51.5	47.6	NA
	20	0	74.6	74.6	72.2	64.6	58.5	53.4	49.3	45.9
10	-5	15,000	58.1	50.2	NA	NA	NA	NA	NA	NA
	-3	14,000	60.1	52.0	45.9	NA	NA	NA	NA	NA
	1	12,000	64.4	55.8	49.2	NA	NA	NA	NA	NA
	5	10,000	68.8	59.6	52.6	47.2	NA	NA	NA	NA
	9	8,000	73.6	63.8	56.3	50.4	45.8	NA	NA	NA
	13	6,000	74.6	68.9	60.8	54.5	49.4	45.3	NA	NA
	17	4,000	74.6	73.7	65.1	58.3	52.8	48.4	NA	NA
	21	2,000	74.6	74.6	68.8	61.6	55.7	51.0	47.2	NA
	25	0	74.6	74.6	72.1	64.6	58.5	53.4	49.3	45.9

NOTES:

1. Maximum climb weights are limited by the design MAX TOGW of 74,600 lb for the GIV-SP and 73,200 for the GIV.
2. Increase MAX TOGW by 300 lb for each 10 knots of headwind up to a maximum of 40 knots. Data not valid for tailwinds.
3. Cowl anti-ice bleeds are assumed ON for temperatures below 10° C; wing anti-ice bleeds prohibited.

GIV-SP Climb Limited Weights, Flaps 10°, Standard Instrument Departure, ctd… GIV-OIS-07

GIV TAKEOFF GROSS WEIGHT LIMITED BY REQUIRED SID CLIMB GRADIENT

1000 FT AGL, FLAPS 10, ONE ENGINE OPERATING, ctd…

DELTA ISA TEMP (DEG C)	AIRPORT AMBIENT TEMP (DEG C)	AIRPORT PRESS ALTITUDE (FT)	TAKEOFF GROSS WEIGHT (1000 LB)							
			REQUIRED SID CLIMB GRADIENT (FT/NM)							
			200	300	400	500	600	700	800	900
15	0	15,000	56.8	49.2	NA	NA	NA	NA	NA	NA
	2	14,000	58.8	50.9	NA	NA	NA	NA	NA	NA
	6	12,000	63.0	54.6	48.2	NA	NA	NA	NA	NA
	10	10,000	68.0	58.9	51.9	46.6	NA	NA	NA	NA
	14	8,000	72.8	63.0	55.6	49.9	45.3	NA	NA	NA
	18	6,000	74.6	67.6	59.7	53.5	48.5	NA	NA	NA
	22	4,000	74.6	72.4	63.9	57.3	51.9	47.6	NA	NA
	26	2,000	74.6	74.6	68.1	61.0	55.1	50.5	46.7	NA
	30	0	74.6	74.6	71.7	64.2	58.1	53.1	49.0	45.6
20	5	15,000	55.5	48.1	NA	NA	NA	NA	NA	NA
	7	14,000	57.5	49.8	NA	NA	NA	NA	NA	NA
	11	12,000	62.1	53.8	47.5	NA	NA	NA	NA	NA
	15	10,000	66.6	57.6	50.9	45.7	NA	NA	NA	NA
	19	8,000	71.3	61.8	54.6	48.9	NA	NA	NA	NA
	23	6,000	74.6	66.3	58.6	52.5	47.7	NA	NA	NA
	27	4,000	74.6	70.7	62.5	56.0	50.8	46.6	NA	NA
	31	2,000	74.6	74.1	65.5	58.7	53.2	48.8	45.1	NA
	35	0	74.6	74.6	68.4	61.3	55.5	50.8	47.0	NA
25	10	15,000	54.7	47.3	NA	NA	NA	NA	NA	NA
	12	14,000	56.7	49.1	NA	NA	NA	NA	NA	NA
	16	12,000	60.8	52.6	46.5	NA	NA	NA	NA	NA
	20	10,000	65.1	56.4	49.8	NA	NA	NA	NA	NA
	24	8,000	69.8	60.5	53.4	48.0	NA	NA	NA	NA
	28	6,000	74.6	64.9	57.3	51.4	46.7	NA	NA	NA
	32	4,000	74.6	67.8	60.0	53.8	48.8	NA	NA	NA
	36	2,000	74.6	70.7	62.5	56.0	50.9	46.7	NA	NA
	40	0	74.6	73.6	65.1	58.3	52.9	48.5	NA	NA
30	15	15,000	53.4	46.2	NA	NA	NA	NA	NA	NA
	17	14,000	55.4	47.9	NA	NA	NA	NA	NA	NA
	21	12,000	59.5	51.5	45.6	NA	NA	NA	NA	NA
	25	10,000	63.7	55.2	48.8	NA	NA	NA	NA	NA
	29	8,000	67.9	58.9	52.0	46.7	NA	NA	NA	NA
	33	6,000	71.3	61.9	54.7	49.1	NA	NA	NA	NA
	37	4,000	74.4	64.6	57.1	51.3	46.7	NA	NA	NA
	41	2,000	74.6	67.2	59.4	53.3	48.5	NA	NA	NA
	45	0	74.6	69.9	61.9	55.4	50.4	46.3	NA	NA

NOTES:
1. Maximum climb weights are limited by the design MAX TOGW of 74,600 lb for the GIV-SP and 73,200 for the GIV.
2. Increase MAX TOGW by 300 lb for each 10 knots of headwind up to a maximum of 40 knots. Data not valid for tailwinds.
3. Cowl anti-ice bleeds are assumed ON for temperatures below 10° C; wing anti-ice bleeds prohibited.

GIV-SP Climb Limited Weights, Flaps 10°, Standard Instrument Departure, ctd… GIV-OIS-07

GIV TAKEOFF GROSS WEIGHT LIMITED BY REQUIRED SID CLIMB GRADIENT

2000 FT AGL, FLAPS 10, ONE ENGINE OPERATING

DELTA ISA TEMP (DEG C)	AIRPORT AMBIENT TEMP (DEG C)	AIRPORT PRESS ALTITUDE (FT)	TAKEOFF GROSS WEIGHT (1000 LB) REQUIRED SID CLIMB GRADIENT (FT/NM) 200	300	400	500	600	700	800	900
≤ -5	≤ -20	15,000	59.2	51.3	45.4	NA	NA	NA	NA	NA
	≤ -18	14,000	61.3	53.2	47.1	NA	NA	NA	NA	NA
	≤ -14	12,000	65.8	57.2	50.6	45.4	NA	NA	NA	NA
	≤ -10	10,000	70.6	61.3	54.2	48.7	NA	NA	NA	NA
	≤ -6	8,000	74.6	65.6	58.0	52.1	47.4	NA	NA	NA
	≤ -2	6,000	74.6	70.1	62.0	55.6	50.5	46.4	NA	NA
	≤ 2	4,000	74.6	74.6	66.2	59.5	53.9	49.4	45.8	NA
	≤ 6	2,000	74.6	74.6	69.7	62.4	56.4	51.7	47.7	NA
	≤ 10	0	74.6	74.6	72.2	64.7	58.5	53.5	49.4	45.9
0	-15	15,000	58.7	50.9	45.0	NA	NA	NA	NA	NA
	-13	14,000	60.8	52.8	46.7	NA	NA	NA	NA	NA
	-9	12,000	65.3	56.7	50.2	45.1	NA	NA	NA	NA
	-5	10,000	70.0	60.8	53.8	48.3	NA	NA	NA	NA
	-1	8,000	74.6	65.1	57.6	51.7	47.1	NA	NA	NA
	3	6,000	74.6	69.7	61.7	55.3	50.2	46.1	NA	NA
	7	4,000	74.6	74.4	65.8	59.1	53.6	49.2	45.5	NA
	11	2,000	74.6	74.6	70.0	62.8	56.9	52.0	48.1	NA
	15	0	74.6	74.6	72.2	64.7	58.5	53.4	49.3	45.9
5	-10	15,000	58.0	50.3	NA	NA	NA	NA	NA	NA
	-8	14,000	60.3	52.4	46.3	NA	NA	NA	NA	NA
	-4	12,000	64.7	56.2	49.7	NA	NA	NA	NA	NA
	0	10,000	69.2	60.2	53.2	47.8	NA	NA	NA	NA
	4	8,000	74.0	64.3	56.9	51.0	46.5	NA	NA	NA
	8	6,000	74.6	68.7	60.8	54.6	49.6	45.5	NA	NA
	12	4,000	74.6	74.2	65.7	58.9	53.5	49.0	45.4	NA
	16	2,000	74.6	74.6	69.4	62.2	56.3	51.5	47.6	NA
	20	0	74.6	74.6	72.0	64.6	58.5	53.4	49.3	45.9
10	-5	15,000	56.7	49.2	NA	NA	NA	NA	NA	NA
	-3	14,000	59.2	51.4	45.5	NA	NA	NA	NA	NA
	1	12,000	63.4	55.1	48.7	NA	NA	NA	NA	NA
	5	10,000	67.8	58.9	52.1	46.9	NA	NA	NA	NA
	9	8,000	72.5	63.0	55.8	50.1	45.6	NA	NA	NA
	13	6,000	74.6	68.0	60.2	54.1	49.1	45.1	NA	NA
	17	4,000	74.6	72.8	64.5	57.9	52.5	48.2	NA	NA
	21	2,000	74.6	74.6	68.5	61.4	55.7	51.0	47.2	NA
	25	0	74.6	74.6	71.8	64.4	58.4	53.4	49.3	45.9

NOTES:
1. Maximum climb weights are limited by the design MAX TOGW of 74,600 lb for the GIV-SP and 73,200 for the GIV.
2. Increase MAX TOGW by 300 lb for each 10 knots of headwind up to a maximum of 40 knots. Data not valid for tailwinds.
3. Cowl anti-ice bleeds are assumed ON for temperatures below 10° C; wing anti-ice bleeds prohibited.

GIV-SP Climb Limited Weights, Flaps 10°, Standard Instrument Departure, ctd… GIV-OIS-07

GIV TAKEOFF GROSS WEIGHT LIMITED BY REQUIRED SID CLIMB GRADIENT

2000 FT AGL, FLAPS 10, ONE ENGINE OPERATING, ctd…

DELTA ISA TEMP (DEG C)	AIRPORT AMBIENT TEMP (DEG C)	AIRPORT PRESS ALTITUDE (FT)	TAKEOFF GROSS WEIGHT (1000 LB)							
			REQUIRED SID CLIMB GRADIENT (FT/NM)							
			200	300	400	500	600	700	800	900
15	0	15,000	55.2	47.9	NA	NA	NA	NA	NA	NA
	2	14,000	57.9	50.3	NA	NA	NA	NA	NA	NA
	6	12,000	62.0	53.9	47.7	NA	NA	NA	NA	NA
	10	10,000	66.9	58.2	51.5	46.3	NA	NA	NA	NA
	14	8,000	71.6	62.3	55.1	49.5	45.1	NA	NA	NA
	18	6,000	74.6	66.8	59.1	53.1	48.3	NA	NA	NA
	22	4,000	74.6	71.5	63.3	56.8	51.6	47.4	NA	NA
	26	2,000	74.6	74.6	67.5	60.6	54.9	50.4	46.7	NA
	30	0	74.6	74.6	71.4	64.1	58.1	53.1	49.0	45.6
20	5	15,000	53.7	46.6	NA	NA	NA	NA	NA	NA
	7	14,000	56.6	49.2	NA	NA	NA	NA	NA	NA
	11	12,000	61.2	53.1	47.1	NA	NA	NA	NA	NA
	15	10,000	65.5	56.9	50.4	45.3	NA	NA	NA	NA
	19	8,000	70.2	61.0	54.0	48.6	NA	NA	NA	NA
	23	6,000	74.6	65.4	58.0	52.0	47.4	NA	NA	NA
	27	4,000	74.6	69.9	61.9	55.6	50.5	46.5	NA	NA
	31	2,000	74.6	73.7	65.3	58.6	53.2	48.8	45.1	NA
	35	0	74.6	74.6	68.2	61.3	55.5	50.8	47.0	NA
25	10	15,000	52.7	45.8	NA	NA	NA	NA	NA	NA
	12	14,000	55.7	48.5	NA	NA	NA	NA	NA	NA
	16	12,000	59.8	52.0	46.1	NA	NA	NA	NA	NA
	20	10,000	64.1	55.7	49.4	NA	NA	NA	NA	NA
	24	8,000	68.7	59.8	52.9	47.6	NA	NA	NA	NA
	28	6,000	73.5	64.0	56.7	50.9	46.4	NA	NA	NA
	32	4,000	74.6	67.4	59.8	53.7	48.8	NA	NA	NA
	36	2,000	74.6	70.3	62.3	56.0	50.9	46.7	NA	NA
	40	0	74.6	73.2	64.9	58.3	52.9	48.5	NA	NA
30	15	15,000	51.2	NA	NA	NA	NA	NA	NA	NA
	17	14,000	54.4	47.3	NA	NA	NA	NA	NA	NA
	21	12,000	58.5	50.8	45.1	NA	NA	NA	NA	NA
	25	10,000	62.7	54.5	48.3	NA	NA	NA	NA	NA
	29	8,000	67.0	58.2	51.6	46.5	NA	NA	NA	NA
	33	6,000	70.6	61.5	54.5	49.0	NA	NA	NA	NA
	37	4,000	73.7	64.2	57.0	51.3	46.7	NA	NA	NA
	41	2,000	74.6	66.8	59.3	53.3	48.5	NA	NA	NA
	45	0	74.6	69.6	61.7	55.4	50.4	46.3	NA	NA

NOTES:
1. Maximum climb weights are limited by the design MAX TOGW of 74,600 lb for the GIV-SP and 73,200 for the GIV.
2. Increase MAX TOGW by 300 lb for each 10 knots of headwind up to a maximum of 40 knots. Data not valid for tailwinds.
3. Cowl anti-ice bleeds are assumed ON for temperatures below 10° C; wing anti-ice bleeds prohibited.

GIV-SP Climb Limited Weights, Flaps 10°, Standard Instrument Departure, ctd… GIV-OIS-07

GIV TAKEOFF GROSS WEIGHT LIMITED BY REQUIRED SID CLIMB GRADIENT

3000 FT AGL, FLAPS 10, ONE ENGINE OPERATING

DELTA ISA TEMP (DEG C)	AIRPORT AMBIENT TEMP (DEG C)	AIRPORT PRESS ALTITUDE (FT)	TAKEOFF GROSS WEIGHT (1000 LB) REQUIRED SID CLIMB GRADIENT (FT/NM)							
			200	300	400	500	600	700	800	900
≤ -5	≤ -20	15,000	58.1	50.5	NA	NA	NA	NA	NA	NA
	≤ -18	14,000	60.3	52.4	46.4	NA	NA	NA	NA	NA
	≤ -14	12,000	64.7	56.3	49.8	NA	NA	NA	NA	NA
	≤ -10	10,000	69.4	60.4	53.4	48.0	NA	NA	NA	NA
	≤ -6	8,000	74.2	64.6	57.2	51.4	46.8	NA	NA	NA
	≤ -2	6,000	74.6	69.1	61.2	54.9	49.9	45.9	NA	NA
	≤ 2	4,000	74.6	73.7	65.3	58.7	53.3	48.9	45.3	NA
	≤ 6	2,000	74.6	74.6	68.7	61.7	56.0	51.3	47.5	NA
	≤ 10	0	74.6	74.6	71.9	64.6	58.5	53.5	49.4	45.9
0	-15	15,000	57.6	50.0	NA	NA	NA	NA	NA	NA
	-13	14,000	59.7	51.9	46.0	NA	NA	NA	NA	NA
	-9	12,000	64.2	55.8	49.4	NA	NA	NA	NA	NA
	-5	10,000	68.8	59.9	53.0	47.7	NA	NA	NA	NA
	-1	8,000	73.7	64.1	56.8	51.0	46.4	NA	NA	NA
	3	6,000	74.6	68.6	60.8	54.6	49.6	45.6	NA	NA
	7	4,000	74.6	73.2	64.9	58.3	52.9	48.6	NA	NA
	11	2,000	74.6	74.6	69.0	62.0	56.2	51.6	47.7	NA
	15	0	74.6	74.6	71.9	64.6	58.5	53.4	49.3	45.9
5	-10	15,000	56.8	49.3	NA	NA	NA	NA	NA	NA
	-8	14,000	59.1	51.3	45.5	NA	NA	NA	NA	NA
	-4	12,000	63.6	55.3	49.0	NA	NA	NA	NA	NA
	0	10,000	68.0	59.2	52.4	47.1	NA	NA	NA	NA
	4	8,000	72.7	63.3	56.1	50.3	45.9	NA	NA	NA
	8	6,000	74.6	67.7	60.0	53.9	49.0	45.0	NA	NA
	12	4,000	74.6	73.0	64.7	58.1	52.8	48.5	NA	NA
	16	2,000	74.6	74.6	68.4	61.4	55.7	51.1	47.3	NA
	20	0	74.6	74.6	71.4	64.2	58.2	53.3	49.3	45.9
10	-5	15,000	55.2	48.0	NA	NA	NA	NA	NA	NA
	-3	14,000	57.7	50.2	NA	NA	NA	NA	NA	NA
	1	12,000	62.3	54.2	48.0	NA	NA	NA	NA	NA
	5	10,000	66.7	58.0	51.4	46.3	NA	NA	NA	NA
	9	8,000	71.3	62.0	55.0	49.4	NA	NA	NA	NA
	13	6,000	74.6	67.0	59.4	53.3	48.5	NA	NA	NA
	17	4,000	74.6	71.7	63.5	57.1	51.8	47.7	NA	NA
	21	2,000	74.6	74.6	67.5	60.6	55.0	50.5	46.8	NA
	25	0	74.6	74.6	71.0	63.8	57.9	53.0	49.0	45.7

NOTES:

1. Maximum climb weights are limited by the design MAX TOGW of 74,600 lb for the GIV-SP and 73,200 for the GIV.
2. Increase MAX TOGW by 300 lb for each 10 knots of headwind up to a maximum of 40 knots. Data not valid for tailwinds.
3. Cowl anti-ice bleeds are assumed ON for temperatures below 10° C; wing anti-ice bleeds prohibited.

GIV-SP Climb Limited Weights, Flaps 10°, Standard Instrument Departure, ctd… GIV-OIS-07

GIV TAKEOFF GROSS WEIGHT LIMITED BY REQUIRED SID CLIMB GRADIENT

3000 FT AGL, FLAPS 10, ONE ENGINE OPERATING, ctd…

DELTA ISA TEMP (DEG C)	AIRPORT AMBIENT TEMP (DEG C)	AIRPORT PRESS ALTITUDE (FT)	TAKEOFF GROSS WEIGHT (1000 LB) REQUIRED SID CLIMB GRADIENT (FT/NM) 200	300	400	500	600	700	800	900
15	0	15,000	53.5	46.6	NA	NA	NA	NA	NA	NA
	2	14,000	56.2	48.9	NA	NA	NA	NA	NA	NA
	6	12,000	61.0	53.1	47.0	NA	NA	NA	NA	NA
	10	10,000	65.8	57.3	50.7	45.7	NA	NA	NA	NA
	14	8,000	70.4	61.3	54.3	48.9	NA	NA	NA	NA
	18	6,000	74.6	65.7	58.2	52.3	47.6	NA	NA	NA
	22	4,000	74.6	70.3	62.4	56.0	50.9	46.8	NA	NA
	26	2,000	74.6	74.6	66.6	59.8	54.3	49.9	46.2	NA
	30	0	74.6	74.6	70.5	63.3	57.4	52.6	48.7	45.3
20	5	15,000	51.7	NA	NA	NA	NA	NA	NA	NA
	7	14,000	54.7	47.6	NA	NA	NA	NA	NA	NA
	11	12,000	60.2	52.3	46.4	NA	NA	NA	NA	NA
	15	10,000	64.4	56.0	49.7	NA	NA	NA	NA	NA
	19	8,000	69.0	60.1	53.2	47.9	NA	NA	NA	NA
	23	6,000	74.0	64.4	57.1	51.3	46.8	NA	NA	NA
	27	4,000	74.6	68.8	61.0	54.8	49.9	45.9	NA	NA
	31	2,000	74.6	72.8	64.6	58.0	52.7	48.5	NA	NA
	35	0	74.6	74.6	67.6	60.8	55.1	50.6	46.9	NA
25	10	15,000	50.7	NA	NA	NA	NA	NA	NA	NA
	12	14,000	53.7	46.8	NA	NA	NA	NA	NA	NA
	16	12,000	58.8	51.2	45.4	NA	NA	NA	NA	NA
	20	10,000	63.0	54.8	48.6	NA	NA	NA	NA	NA
	24	8,000	67.6	58.8	52.2	47.0	NA	NA	NA	NA
	28	6,000	72.2	62.9	55.8	50.2	45.8	NA	NA	NA
	32	4,000	74.6	66.7	59.2	53.2	48.5	NA	NA	NA
	36	2,000	74.6	69.6	61.8	55.5	50.6	46.5	NA	NA
	40	0	74.6	72.6	64.4	57.9	52.7	48.4	NA	NA
30	15	15,000	48.9	NA	NA	NA	NA	NA	NA	NA
	17	14,000	52.1	45.4	NA	NA	NA	NA	NA	NA
	21	12,000	57.5	50.0	NA	NA	NA	NA	NA	NA
	25	10,000	61.7	53.7	47.7	NA	NA	NA	NA	NA
	29	8,000	65.8	57.3	50.8	45.8	NA	NA	NA	NA
	33	6,000	69.6	60.7	53.8	48.5	NA	NA	NA	NA
	37	4,000	72.8	63.5	56.4	50.8	46.3	NA	NA	NA
	41	2,000	74.6	66.2	58.8	53.0	48.3	NA	NA	NA
	45	0	74.6	69.0	61.2	55.0	50.2	46.1	NA	NA

NOTES:
1. Maximum climb weights are limited by the design MAX TOGW of 74,600 lb for the GIV-SP and 73,200 for the GIV.
2. Increase MAX TOGW by 300 lb for each 10 knots of headwind up to a maximum of 40 knots. Data not valid for tailwinds.
3. Cowl anti-ice bleeds are assumed ON for temperatures below 10° C; wing anti-ice bleeds prohibited.

GIV-SP Climb Limited Weights, Flaps 10°, Standard Instrument Departure, ctd… GIV-OIS-07

GIV TAKEOFF GROSS WEIGHT LIMITED BY REQUIRED SID CLIMB GRADIENT

4000 FT AGL, FLAPS 10, ONE ENGINE OPERATING

DELTA ISA TEMP (DEG C)	AIRPORT AMBIENT TEMP (DEG C)	AIRPORT PRESS ALTITUDE (FT)	TAKEOFF GROSS WEIGHT (1000 LB) REQUIRED SID CLIMB GRADIENT (FT/NM) 200	300	400	500	600	700	800	900
≤ -5	≤ -20	15,000	57.3	49.8	NA	NA	NA	NA	NA	NA
	≤ -18	14,000	59.3	51.6	45.7	NA	NA	NA	NA	NA
	≤ -14	12,000	63.7	55.4	49.1	NA	NA	NA	NA	NA
	≤ -10	10,000	68.3	59.5	52.7	47.4	NA	NA	NA	NA
	≤ -6	8,000	73.1	63.7	56.5	50.7	46.2	NA	NA	NA
	≤ -2	6,000	74.6	68.1	60.4	54.2	49.3	45.4	NA	NA
	≤ 2	4,000	74.6	72.7	64.5	57.9	52.6	48.4	NA	NA
	≤ 6	2,000	74.6	74.6	67.8	60.9	55.3	50.8	47.1	NA
	≤ 10	0	74.6	74.6	71.6	64.4	58.4	53.5	49.4	45.9
0	-15	15,000	56.8	49.4	NA	NA	NA	NA	NA	NA
	-13	14,000	58.8	51.1	45.3	NA	NA	NA	NA	NA
	-9	12,000	63.2	55.0	48.7	NA	NA	NA	NA	NA
	-5	10,000	67.7	59.0	52.3	47.1	NA	NA	NA	NA
	-1	8,000	72.6	63.2	56.0	50.4	45.9	NA	NA	NA
	3	6,000	74.6	67.6	60.0	53.9	49.0	45.1	NA	NA
	7	4,000	74.6	72.2	64.1	57.6	52.3	48.1	NA	NA
	11	2,000	74.6	74.6	68.2	61.3	55.6	51.0	47.3	NA
	15	0	74.6	74.6	71.4	64.2	58.2	53.4	49.3	45.9
5	-10	15,000	56.0	48.7	NA	NA	NA	NA	NA	NA
	-8	14,000	57.9	50.4	NA	NA	NA	NA	NA	NA
	-4	12,000	62.6	54.5	48.3	NA	NA	NA	NA	NA
	0	10,000	67.0	58.4	51.7	46.6	NA	NA	NA	NA
	4	8,000	71.7	62.5	55.4	49.8	45.4	NA	NA	NA
	8	6,000	74.6	66.8	59.2	53.2	48.4	NA	NA	NA
	12	4,000	74.6	72.0	63.8	57.4	52.1	47.9	NA	NA
	16	2,000	74.6	74.6	67.5	60.6	55.0	50.6	46.8	NA
	20	0	74.6	74.6	71.0	63.8	57.9	53.1	49.1	45.8
10	-5	15,000	54.5	47.5	NA	NA	NA	NA	NA	NA
	-3	14,000	56.4	49.0	NA	NA	NA	NA	NA	NA
	1	12,000	61.4	53.4	47.4	NA	NA	NA	NA	NA
	5	10,000	65.7	57.2	50.7	45.7	NA	NA	NA	NA
	9	8,000	70.2	61.2	54.3	48.8	NA	NA	NA	NA
	13	6,000	74.6	66.1	58.6	52.7	48.0	NA	NA	NA
	17	4,000	74.6	70.7	62.7	56.3	51.2	47.1	NA	NA
	21	2,000	74.6	74.6	66.6	59.9	54.3	49.9	46.3	NA
	25	0	74.6	74.6	70.4	63.3	57.4	52.6	48.7	45.4

NOTES:

1. Maximum climb weights are limited by the design MAX TOGW of 74,600 lb for the GIV-SP and 73,200 for the GIV.
2. Increase MAX TOGW by 300 lb for each 10 knots of headwind up to a maximum of 40 knots. Data not valid for tailwinds.
3. Cowl anti-ice bleeds are assumed ON for temperatures below 10° C; wing anti-ice bleeds prohibited.

GIV-SP Climb Limited Weights, Flaps 10°, Standard Instrument Departure, ctd… GIV-OIS-07

GIV TAKEOFF GROSS WEIGHT LIMITED BY REQUIRED SID CLIMB GRADIENT

4000 FT AGL, FLAPS 10, ONE ENGINE OPERATING, ctd…

DELTA ISA TEMP (DEG C)	AIRPORT AMBIENT TEMP (DEG C)	AIRPORT PRESS ALTITUDE (FT)	TAKEOFF GROSS WEIGHT (1000 LB) REQUIRED SID CLIMB GRADIENT (FT/NM) 200	300	400	500	600	700	800	900
15	0	15,000	52.9	46.1	NA	NA	NA	NA	NA	NA
	2	14,000	54.6	47.6	NA	NA	NA	NA	NA	NA
	6	12,000	60.1	52.3	46.4	NA	NA	NA	NA	NA
	10	10,000	64.8	56.5	50.1	45.1	NA	NA	NA	NA
	14	8,000	69.4	60.5	53.6	48.3	NA	NA	NA	NA
	18	6,000	74.3	64.8	57.5	51.7	47.1	NA	NA	NA
	22	4,000	74.6	69.3	61.5	55.3	50.3	46.3	NA	NA
	26	2,000	74.6	74.0	65.7	59.1	53.7	49.3	45.7	NA
	30	0	74.6	74.6	69.6	62.6	56.8	52.1	48.2	NA
20	5	15,000	51.2	NA	NA	NA	NA	NA	NA	NA
	7	14,000	52.8	46.0	NA	NA	NA	NA	NA	NA
	11	12,000	59.2	51.6	45.8	NA	NA	NA	NA	NA
	15	10,000	63.4	55.3	49.1	NA	NA	NA	NA	NA
	19	8,000	67.9	59.2	52.5	47.3	NA	NA	NA	NA
	23	6,000	72.8	63.5	56.3	50.7	46.2	NA	NA	NA
	27	4,000	74.6	67.8	60.2	54.1	49.3	45.3	NA	NA
	31	2,000	74.6	71.8	63.7	57.3	52.1	48.0	NA	NA
	35	0	74.6	74.6	67.1	60.3	54.8	50.3	46.6	NA
25	10	15,000	50.2	NA	NA	NA	NA	NA	NA	NA
	12	14,000	51.8	45.1	NA	NA	NA	NA	NA	NA
	16	12,000	57.9	50.4	NA	NA	NA	NA	NA	NA
	20	10,000	62.0	54.1	48.0	NA	NA	NA	NA	NA
	24	8,000	66.6	58.0	51.5	46.4	NA	NA	NA	NA
	28	6,000	71.1	62.0	55.0	49.6	45.2	NA	NA	NA
	32	4,000	74.6	65.7	58.3	52.5	47.9	NA	NA	NA
	36	2,000	74.6	69.0	61.3	55.1	50.3	46.3	NA	NA
	40	0	74.6	72.0	64.0	57.5	52.4	48.2	NA	NA
30	15	15,000	48.4	NA	NA	NA	NA	NA	NA	NA
	17	14,000	49.9	NA	NA	NA	NA	NA	NA	NA
	21	12,000	56.6	49.3	NA	NA	NA	NA	NA	NA
	25	10,000	60.7	52.9	47.0	NA	NA	NA	NA	NA
	29	8,000	64.8	56.5	50.1	45.2	NA	NA	NA	NA
	33	6,000	68.7	59.9	53.2	48.0	NA	NA	NA	NA
	37	4,000	72.1	63.0	55.9	50.4	46.0	NA	NA	NA
	41	2,000	74.6	65.7	58.4	52.6	48.0	NA	NA	NA
	45	0	74.6	68.5	60.8	54.7	49.9	45.9	NA	NA

NOTES:
1. Maximum climb weights are limited by the design MAX TOGW of 74,600 lb for the GIV-SP and 73,200 for the GIV.
2. Increase MAX TOGW by 300 lb for each 10 knots of headwind up to a maximum of 40 knots. Data not valid for tailwinds.
3. Cowl anti-ice bleeds are assumed ON for temperatures below 10° C; wing anti-ice bleeds prohibited.

GIV-SP Climb Limited Weights, Flaps 10°, Standard Instrument Departure, ctd… GIV-OIS-07

GIV TAKEOFF GROSS WEIGHT LIMITED BY REQUIRED SID CLIMB GRADIENT

5000 FT AGL, FLAPS 10, ONE ENGINE OPERATING

DELTA ISA TEMP (DEG C)	AIRPORT AMBIENT TEMP (DEG C)	AIRPORT PRESS ALTITUDE (FT)	TAKEOFF GROSS WEIGHT (1000 LB)							
			REQUIRED SID CLIMB GRADIENT (FT/NM)							
			200	300	400	500	600	700	800	900
≤ -5	≤ -20	15,000	56.3	49.0	NA	NA	NA	NA	NA	NA
	≤ -18	14,000	58.4	50.8	NA	NA	NA	NA	NA	NA
	≤ -14	12,000	62.6	54.5	48.3	NA	NA	NA	NA	NA
	≤ -10	10,000	67.1	58.5	51.8	46.7	NA	NA	NA	NA
	≤ -6	8,000	71.9	62.6	55.5	49.9	45.5	NA	NA	NA
	≤ -2	6,000	74.6	67.0	59.4	53.4	48.6	NA	NA	NA
	≤ 2	4,000	74.6	71.6	63.5	57.0	51.9	47.7	NA	NA
	≤ 6	2,000	74.6	74.6	66.7	60.0	54.4	50.0	46.4	NA
	≤ 10	0	74.6	74.6	70.5	63.4	57.5	52.7	48.8	45.4
0	-15	15,000	56.1	48.8	NA	NA	NA	NA	NA	NA
	-13	14,000	57.9	50.4	NA	NA	NA	NA	NA	NA
	-9	12,000	62.1	54.0	47.9	NA	NA	NA	NA	NA
	-5	10,000	66.6	58.0	51.4	46.3	NA	NA	NA	NA
	-1	8,000	71.4	62.2	55.1	49.6	45.2	NA	NA	NA
	3	6,000	74.6	66.5	59.0	53.0	48.3	NA	NA	NA
	7	4,000	74.6	71.1	63.0	56.6	51.5	47.4	NA	NA
	11	2,000	74.6	74.6	67.1	60.3	54.7	50.2	46.6	NA
	15	0	74.6	74.6	70.3	63.1	57.3	52.5	48.6	45.3
5	-10	15,000	55.3	48.1	NA	NA	NA	NA	NA	NA
	-8	14,000	57.1	49.7	NA	NA	NA	NA	NA	NA
	-4	12,000	61.4	53.4	47.4	NA	NA	NA	NA	NA
	0	10,000	65.9	57.4	50.9	45.8	NA	NA	NA	NA
	4	8,000	70.5	61.4	54.5	49.0	NA	NA	NA	NA
	8	6,000	74.6	65.7	58.3	52.4	47.7	NA	NA	NA
	12	4,000	74.6	70.9	62.9	56.5	51.4	47.2	NA	NA
	16	2,000	74.6	74.6	66.4	59.7	54.2	49.8	46.1	NA
	20	0	74.6	74.6	69.9	62.8	57.0	52.3	48.4	45.1
10	-5	15,000	53.8	46.8	NA	NA	NA	NA	NA	NA
	-3	14,000	55.6	48.4	NA	NA	NA	NA	NA	NA
	1	12,000	59.9	52.2	46.3	NA	NA	NA	NA	NA
	5	10,000	64.6	56.3	49.9	NA	NA	NA	NA	NA
	9	8,000	69.2	60.3	53.4	48.1	NA	NA	NA	NA
	13	6,000	74.6	65.0	57.7	51.8	47.2	NA	NA	NA
	17	4,000	74.6	69.5	61.7	55.4	50.4	46.4	NA	NA
	21	2,000	74.6	73.8	65.5	58.9	53.5	49.2	45.5	NA
	25	0	74.6	74.6	69.3	62.3	56.5	51.9	48.0	NA

NOTES:

1. Maximum climb weights are limited by the design MAX TOGW of 74,600 lb for the GIV-SP and 73,200 for the GIV.
2. Increase MAX TOGW by 300 lb for each 10 knots of headwind up to a maximum of 40 knots. Data not valid for tailwinds.
3. Cowl anti-ice bleeds are assumed ON for temperatures below 10° C; wing anti-ice bleeds prohibited.

GIV-SP Climb Limited Weights, Flaps 10°, Standard Instrument Departure, ctd… GIV-OIS-07

GIV TAKEOFF GROSS WEIGHT LIMITED BY REQUIRED SID CLIMB GRADIENT

5000 FT AGL, FLAPS 10, ONE ENGINE OPERATING, ctd…

DELTA ISA TEMP (DEG C)	AIRPORT AMBIENT TEMP (DEG C)	AIRPORT PRESS ALTITUDE (FT)	TAKEOFF GROSS WEIGHT (1000 LB)							
			REQUIRED SID CLIMB GRADIENT (FT/NM)							
			200	300	400	500	600	700	800	900
15	0	15,000	52.3	45.5	NA	NA	NA	NA	NA	NA
	2	14,000	53.9	47.0	NA	NA	NA	NA	NA	NA
	6	12,000	58.4	50.8	45.1	NA	NA	NA	NA	NA
	10	10,000	63.8	55.6	49.3	NA	NA	NA	NA	NA
	14	8,000	68.3	59.5	52.8	47.5	NA	NA	NA	NA
	18	6,000	73.1	63.7	56.5	50.8	46.4	NA	NA	NA
	22	4,000	74.6	68.2	60.5	54.4	49.5	45.6	NA	NA
	26	2,000	74.6	72.8	64.6	58.1	52.8	48.6	NA	NA
	30	0	74.6	74.6	68.6	61.6	55.9	51.3	47.6	NA
20	5	15,000	50.6	NA	NA	NA	NA	NA	NA	NA
	7	14,000	52.2	45.4	NA	NA	NA	NA	NA	NA
	11	12,000	57.5	50.0	NA	NA	NA	NA	NA	NA
	15	10,000	62.4	54.4	48.3	NA	NA	NA	NA	NA
	19	8,000	66.8	58.3	51.7	46.6	NA	NA	NA	NA
	23	6,000	71.7	62.5	55.4	49.9	45.5	NA	NA	NA
	27	4,000	74.6	66.7	59.2	53.2	48.5	NA	NA	NA
	31	2,000	74.6	70.6	62.7	56.3	51.3	47.2	NA	NA
	35	0	74.6	74.6	66.2	59.6	54.1	49.7	46.1	NA
25	10	15,000	49.6	NA	NA	NA	NA	NA	NA	NA
	12	14,000	51.2	NA	NA	NA	NA	NA	NA	NA
	16	12,000	55.9	48.7	NA	NA	NA	NA	NA	NA
	20	10,000	61.0	53.2	47.3	NA	NA	NA	NA	NA
	24	8,000	65.4	57.0	50.6	45.7	NA	NA	NA	NA
	28	6,000	70.0	61.0	54.2	48.8	NA	NA	NA	NA
	32	4,000	73.9	64.5	57.2	51.6	47.0	NA	NA	NA
	36	2,000	74.6	68.2	60.6	54.5	49.7	45.7	NA	NA
	40	0	74.6	71.3	63.3	56.9	51.8	47.7	NA	NA
30	15	15,000	47.9	NA	NA	NA	NA	NA	NA	NA
	17	14,000	49.4	NA	NA	NA	NA	NA	NA	NA
	21	12,000	54.3	47.3	NA	NA	NA	NA	NA	NA
	25	10,000	59.7	52.0	46.3	NA	NA	NA	NA	NA
	29	8,000	63.7	55.6	49.4	NA	NA	NA	NA	NA
	33	6,000	67.5	58.9	52.3	47.2	NA	NA	NA	NA
	37	4,000	71.1	62.1	55.1	49.7	45.4	NA	NA	NA
	41	2,000	74.4	65.0	57.7	52.0	47.5	NA	NA	NA
	45	0	74.6	67.8	60.2	54.2	49.5	45.5	NA	NA

NOTES:
1. Maximum climb weights are limited by the design MAX TOGW of 74,600 lb for the GIV-SP and 73,200 for the GIV.
2. Increase MAX TOGW by 300 lb for each 10 knots of headwind up to a maximum of 40 knots. Data not valid for tailwinds.
3. Cowl anti-ice bleeds are assumed ON for temperatures below 10° C; wing anti-ice bleeds prohibited.

GIV-SP Climb Limited Weights, Flaps 10°, Standard Instrument Departure, ctd… GIV-OIS-07

GIV TAKEOFF GROSS WEIGHT LIMITED BY REQUIRED SID CLIMB GRADIENT

6000 FT AGL, FLAPS 10, ONE ENGINE OPERATING

DELTA ISA TEMP (DEG C)	AIRPORT AMBIENT TEMP (DEG C)	AIRPORT PRESS ALTITUDE (FT)	TAKEOFF GROSS WEIGHT (1000 LB)							
			REQUIRED SID CLIMB GRADIENT (FT/NM)							
			200	300	400	500	600	700	800	900
	≤ -20	15,000	54.3	48.2	NA	NA	NA	NA	NA	NA
	≤ -18	14,000	56.3	50.0	NA	NA	NA	NA	NA	NA
	≤ -14	12,000	60.2	53.6	47.5	NA	NA	NA	NA	NA
	≤ -10	10,000	64.3	57.5	51.0	45.9	NA	NA	NA	NA
≤ -5	≤ -6	8,000	68.7	61.6	54.6	49.1	NA	NA	NA	NA
	≤ -2	6,000	73.2	65.9	58.5	52.5	47.8	NA	NA	NA
	≤ 2	4,000	74.6	70.5	62.5	56.1	51.0	47.0	NA	NA
	≤ 6	2,000	74.6	74.0	65.7	59.0	53.6	49.3	45.7	NA
	≤ 10	0	74.6	74.6	69.3	62.3	56.5	51.9	48.0	NA
	-15	15,000	54.1	47.8	NA	NA	NA	NA	NA	NA
	-13	14,000	56.2	49.7	NA	NA	NA	NA	NA	NA
	-9	12,000	59.8	53.1	47.1	NA	NA	NA	NA	NA
	-5	10,000	63.9	57.0	50.6	45.5	NA	NA	NA	NA
0	-1	8,000	68.3	61.2	54.2	48.8	NA	NA	NA	NA
	3	6,000	72.9	65.5	58.1	52.2	47.5	NA	NA	NA
	7	4,000	74.6	70.0	62.1	55.7	50.7	46.7	NA	NA
	11	2,000	74.6	74.4	66.0	59.3	53.9	49.5	45.9	NA
	15	0	74.6	74.6	69.1	62.1	56.4	51.7	47.9	NA
	-10	15,000	53.6	47.3	NA	NA	NA	NA	NA	NA
	-8	14,000	55.4	49.1	NA	NA	NA	NA	NA	NA
	-4	12,000	58.9	52.3	46.4	NA	NA	NA	NA	NA
	0	10,000	63.3	56.4	50.0	45.1	NA	NA	NA	NA
5	4	8,000	67.6	60.5	53.6	48.3	NA	NA	NA	NA
	8	6,000	72.2	64.7	57.4	51.6	47.0	NA	NA	NA
	12	4,000	74.6	69.8	61.9	55.6	50.6	46.5	NA	NA
	16	2,000	74.6	73.6	65.3	58.7	53.3	49.0	45.4	NA
	20	0	74.6	74.6	68.8	61.8	56.1	51.5	47.7	NA
	-5	15,000	52.2	46.2	NA	NA	NA	NA	NA	NA
	-3	14,000	53.9	47.8	NA	NA	NA	NA	NA	NA
	1	12,000	57.2	50.9	45.2	NA	NA	NA	NA	NA
	5	10,000	62.1	55.4	49.1	NA	NA	NA	NA	NA
10	9	8,000	66.3	59.3	52.6	47.4	NA	NA	NA	NA
	13	6,000	71.5	64.0	56.8	51.0	46.5	NA	NA	NA
	17	4,000	74.6	68.5	60.7	54.6	49.7	45.7	NA	NA
	21	2,000	74.6	72.6	64.4	57.9	52.7	48.4	NA	NA
	25	0	74.6	74.6	68.2	61.3	55.6	51.0	47.3	NA

NOTES:

1. Maximum climb weights are limited by the design MAX TOGW of 74,600 lb for the GIV-SP and 73,200 for the GIV.
2. Increase MAX TOGW by 300 lb for each 10 knots of headwind up to a maximum of 40 knots. Data not valid for tailwinds.
3. Cowl anti-ice bleeds are assumed ON for temperatures below 10° C; wing anti-ice bleeds prohibited.

GIV-SP Climb Limited Weights, Flaps 10°, Standard Instrument Departure, ctd… GIV-OIS-07

GIV TAKEOFF GROSS WEIGHT LIMITED BY REQUIRED SID CLIMB GRADIENT

6000 FT AGL, FLAPS 10, ONE ENGINE OPERATING, ctd…

DELTA ISA TEMP (DEG C)	AIRPORT AMBIENT TEMP (DEG C)	AIRPORT PRESS ALTITUDE (FT)	TAKEOFF GROSS WEIGHT (1000 LB) REQUIRED SID CLIMB GRADIENT (FT/NM) 200	300	400	500	600	700	800	900
15	0	15,000	50.6	NA	NA	NA	NA	NA	NA	NA
	2	14,000	52.2	46.4	NA	NA	NA	NA	NA	NA
	6	12,000	55.3	49.4	NA	NA	NA	NA	NA	NA
	10	10,000	61.4	54.7	48.5	NA	NA	NA	NA	NA
	14	8,000	65.5	58.6	51.9	46.8	NA	NA	NA	NA
	18	6,000	70.0	62.8	55.7	50.0	45.7	NA	NA	NA
	22	4,000	74.6	67.1	59.5	53.5	48.8	NA	NA	NA
	26	2,000	74.6	71.6	63.5	57.1	52.0	47.8	NA	NA
	30	0	74.6	74.6	67.5	60.6	55.0	50.5	46.8	NA
20	5	15,000	48.9	NA	NA	NA	NA	NA	NA	NA
	7	14,000	50.4	NA	NA	NA	NA	NA	NA	NA
	11	12,000	54.4	48.6	NA	NA	NA	NA	NA	NA
	15	10,000	60.0	53.5	47.5	NA	NA	NA	NA	NA
	19	8,000	64.1	57.4	50.9	45.9	NA	NA	NA	NA
	23	6,000	68.5	61.5	54.5	49.1	NA	NA	NA	NA
	27	4,000	72.8	65.6	58.2	52.4	47.8	NA	NA	NA
	31	2,000	74.6	69.4	61.6	55.4	50.5	46.5	NA	NA
	35	0	74.6	73.4	65.2	58.6	53.3	49.0	45.4	NA
25	10	15,000	48.1	NA	NA	NA	NA	NA	NA	NA
	12	14,000	49.5	NA	NA	NA	NA	NA	NA	NA
	16	12,000	52.4	46.9	NA	NA	NA	NA	NA	NA
	20	10,000	58.6	52.3	46.5	NA	NA	NA	NA	NA
	24	8,000	62.7	56.1	49.8	NA	NA	NA	NA	NA
	28	6,000	66.9	60.1	53.3	48.1	NA	NA	NA	NA
	32	4,000	70.2	63.5	56.3	50.7	46.3	NA	NA	NA
	36	2,000	73.8	67.0	59.5	53.6	48.9	NA	NA	NA
	40	0	74.6	70.5	62.6	56.3	51.3	47.2	NA	NA
30	15	15,000	46.3	NA	NA	NA	NA	NA	NA	NA
	17	14,000	47.7	NA	NA	NA	NA	NA	NA	NA
	21	12,000	50.4	45.4	NA	NA	NA	NA	NA	NA
	25	10,000	57.2	51.2	45.5	NA	NA	NA	NA	NA
	29	8,000	60.9	54.7	48.6	NA	NA	NA	NA	NA
	33	6,000	64.2	58.0	51.5	46.5	NA	NA	NA	NA
	37	4,000	67.4	61.2	54.4	49.1	NA	NA	NA	NA
	41	2,000	70.4	64.2	57.0	51.5	47.0	NA	NA	NA
	45	0	73.3	67.1	59.6	53.7	49.0	45.0	NA	NA

NOTES:

1. Maximum climb weights are limited by the design MAX TOGW of 74,600 lb for the GIV-SP and 73,200 for the GIV.
2. Increase MAX TOGW by 300 lb for each 10 knots of headwind up to a maximum of 40 knots. Data not valid for tailwinds.
3. Cowl anti-ice bleeds are assumed ON for temperatures below 10° C; wing anti-ice bleeds prohibited.

GIV-SP SID Climb Performance Conversion Table

OM 11-04-40

Departure climb requirements are sometimes expressed in units of degrees and percent climb gradient as well as Ft/NM which is shown on the SID climb tables. Provided below is a table which can be used to convert climb requirements in degrees or percent to Ft/NM.

NOTE: Per FAA Terminal Instrument Procedures (TERPs) criteria, SIDs specified at U.S. civilian airports will ensure that any limiting obstacles will be cleared by a margin of climb of 48 Ft/NM (0.8% or 0.5 deg). If a departure climb is specified at a military airport or non-US airport, it is important to determine if the specified climb requirement provides at least the same obstacle clearance margin. If uncertainty exists on this point, add 48 Ft/NM, 0.8% or 0.5 deg to the stated climb requirement before entering the SID climb tables to determine a maximum allowable takeoff weight.

Deg	%	Ft/NM	Deg	%	Ft/NM
1.0	1.7	106	5.0	8.7	532
1.2	2.1	127	5.2	9.1	553
1.4	2.4	148	5.4	9.5	574
1.6	2.8	170	5.6	9.8	596
1.8	3.1	191	5.8	10.2	617
2.0	3.5	212	6.0	10.5	639
2.2	3.8	233	6.2	10.9	660
2.4	4.2	255	6.4	11.2	682
2.6	4.5	276	6.6	11.6	703
2.8	4.9	297	6.8	11.9	725
3.0	5.2	318	7.0	12.3	746
3.2	5.6	340	7.2	12.6	768
3.4	5.9	361	7.4	13.0	789
3.6	6.3	382	7.6	13.3	811
3.8	6.6	404	7.8	13.7	832
4.0	7.0	425	8.0	14.1	854
4.2	7.3	446	8.2	14.4	876
4.4	7.7	468	8.4	14.8	897
4.6	8.0	489	8.6	15.1	919
4.8	8.4	510	8.8	15.5	941

GIV-SP Twin Engine Cruise Altitudes: Mach 0.77 CCM

For airplanes SN 1214 and subsequent and SN 1000 thru 1213 with ASC 190 incorporated.

ALT (FT)	Δ ISA CEILING	74	70	66	62	58	54	50	46	42	38
		GROSS WEIGHT - 1000 LB									
					-20°C to 0°C			+20°C			
45000	NM/LB	****	****	****	****	.1721	.1857	.1982	.2101	.2218	.2326
	TWIND	****	****	****	****	3	0	0	0	0	0
43000	NM/LB	****	****	****	.1622	.1732	.1834	.1931	.2029	.2119	.2216
	TWIND	****	****	****	0	0	6	12	16	21	22
41000	NM/LB	****	.1439	.1534	.1621	.1704	.1781	.1864	.1938	.2019	.2089
	TWIND	****	2	0	1	7	19	28	37	43	50
39000	NM/LB	.1372	.1447	.1518	.1584	.1652	.1716	.1777	.1845	.1904	.1958
	TWIND	0	0	5	11	21	36	51	61	73	83
37000	NM/LB	.1365	.1421	.1478	.1532	.1584	.1634	.1691	.1740	.1784	.1821
	TWIND	2	8	17	26	41	60	76	92	107	122
35000	NM/LB	.1329	.1376	.1420	.1462	.1510	.1552	.1591	.1628	.1664	.1687
	TWIND	14	23	36	49	65	87	109	129	148	168
33000	NM/LB	.1276	.1311	.1351	.1385	.1418	.1450	.1486	.1510	.1529	****
	TWIND	34	41	61	77	99	126	150	175	202	****
31000	NM/LB	.1219	.1247	.1275	.1309	.1335	.1358	****	****	****	****
	TWIND	57	72	92	108	134	166	****	****	****	****
29000	NM/LB	.1162	.1185	.1208	.1234	.1253	****	****	****	****	****
	TWIND	82	101	123	143	174	****	****	****	****	****
27000	NM/LB	.1092	.1110	.1127	.1142	****	****	****	****	****	****
	TWIND	118	140	166	193	****	****	****	****	****	****
25000	NM/LB	.1030	.1043	****	****	****	****	****	****	****	****
	TWIND	154	179	****	****	****	****	****	****	****	****

***NOTES*:**
1. Values at optimum altitude are shaded.
2. Service Ceilings (100 FPM rate of climb) for selected temperature conditions are represented on the table by bold lines.
3. Tailwind Factors (TWIND) are the difference in flight level wind required to equal ground specific range at optimum altitude.

GIV-SP Twin Engine Cruise Altitudes: Mach 0.80 CCM

For airplanes SN 1214 and subsequent and SN 1000 thru 1213 with ASC 190 incorporated.

		GROSS WEIGHT - 1000 LB									
		74	70	66	62	58	54	50	46	42	38
ALT (FT)	Δ ISA CEILING					-20°C to 0°C				+20°C	
45000	NM/LB	****	****	****	****	.1694	.1816	.1919	.2023	.2126	.2212
	TWIND	****	****	****	****	0	0	0	0	0	0
43000	NM/LB	****	****	****	.1592	.1688	.1773	.1858	.1944	.2015	.2093
	TWIND	****	****	****	0	2	11	15	19	25	26
41000	NM/LB	****	.1415	.1498	.1572	.1644	.1711	.1783	.1841	.1907	.1962
	TWIND	****	0	0	6	14	28	35	45	53	58
39000	NM/LB	.1344	.1407	.1468	.1526	.1587	.1639	.1687	.1742	.1788	.1831
	TWIND	0	3	9	20	31	50	63	74	87	95
37000	NM/LB	.1321	.1370	.1422	.1467	.1509	.1549	.1595	.1633	.1668	.1697
	TWIND	8	15	24	39	56	79	93	110	126	139
35000	NM/LB	.1278	.1321	.1356	.1390	.1429	.1461	.1493	.1522	.1548	.1565
	TWIND	24	33	48	67	85	112	132	152	172	191
33000	NM/LB	.1220	.1249	.1281	.1309	.1336	.1362	.1388	****	****	****
	TWIND	47	62	79	101	125	155	178	****	****	****
31000	NM/LB	.1158	.1182	.1206	.1231	.1252	****	****	****	****	****
	TWIND	75	92	114	138	166	****	****	****	****	****
29000	NM/LB	.1097	.1116	.1134	.1154	****	****	****	****	****	****
	TWIND	107	127	152	180	****	****	****	****	****	****
27000	NM/LB	.1031	.1047	****	****	****	****	****	****	****	****
	TWIND	145	168	****	****	****	****	****	****	****	****
25000	NM/LB	.0971	****	****	****	****	****	****	****	****	****
	TWIND	185	****	****	****	****	****	****	****	****	****

NOTES:
1. Values at optimum altitude are shaded.
2. Service Ceilings (100 FPM rate of climb) for selected temperature conditions are represented on the table by bold lines.
3. Tailwind Factors (TWIND) are the difference in flight level wind required to equal ground specific range at optimum altitude.

GIV-SP Twin Engine Cruise Altitudes: Mach 0.83 CCM

For airplanes SN 1214 and subsequent and SN 1000 thru 1213 with ASC 190 incorporated.

		GROSS WEIGHT - 1000 LB									
		74	70	66	62	58	54	50	46	42	38
ALT (FT)	Δ ISA CEILING						-20°C to 0°C			+15°C	
45000	NM/LB	****	****	****	****	****	****	.1708	.1820	.1911	.1992
	TWIND	****	****	****	****	****	****	0	0	0	0
43000	NM/LB	****	****	****	****	.1474	.1581	.1674	.1746	.1814	.1871
	TWIND	****	****	****	****	0	0	10	20	25	31
41000	NM/LB	****	****	****	.1390	.1471	.1546	.1602	.1657	.1705	.1754
	TWIND	****	****	****	0	1	11	31	47	57	65
39000	NM/LB	****	.1234	.1307	.1370	.1424	.1472	.1518	.1557	.1599	.1637
	TWIND	****	0	0	7	17	35	60	80	93	103
37000	NM/LB	.1173	.1227	.1273	.1318	.1356	.1395	.1425	.1459	.1492	.1519
	TWIND	0	3	13	26	41	63	94	118	134	148
35000	NM/LB	.1149	.1185	.1218	.1250	.1277	.1305	.1334	.1360	.1376	.1393
	TWIND	10	20	35	54	73	101	134	162	186	206
33000	NM/LB	.1104	.1132	.1152	.1178	.1202	.1228	.1240	****	****	****
	TWIND	30	43	65	87	109	139	182	****	****	****
31000	NM/LB	.1051	.1075	.1098	.1108	.1129	.1147	****	****	****	****
	TWIND	57	72	93	124	149	184	****	****	****	****
29000	NM/LB	.0987	.1004	.1022	.1031	.1045	****	****	****	****	****
	TWIND	93	113	132	171	201	****	****	****	****	****
27000	NM/LB	.0942	.0957	.0973	****	****	****	****	****	****	****
	TWIND	122	143	170	****	****	****	****	****	****	****
25000	NM/LB	****	****	****	****	****	****	****	****	****	****
	TWIND	****	****	****	****	****	****	****	****	****	****

NOTES:
1. Values at optimum altitude are shaded.
2. Service Ceilings (100 FPM rate of climb) for selected temperature conditions are represented on the table by bold lines.
3. Tailwind Factors (TWIND) are the difference in flight level wind required to equal ground specific range at optimum altitude.

GIV-SP Maximum Range Cruise - ISA

CCM

For airplanes SN 1214 and subsequent and SN 1000 thru 1213 with ASC 190 incorporated.

ALT (FT)	OAT (°C)		GROSS WEIGHT - 1000 LB									
			76	74	72	70	68	66	64	62	60	58
45000		MT	****	****	****	****	****	****	****	****	****	0.778
	-56.5	KCAS	****	****	****	****	****	****	****	****	****	209
		FF	****	****	****	****	****	****	****	****	****	2590
		NAM/LB	****	****	****	****	****	****	****	****	****	.1727
43000		MT	****	****	****	****	****	****	0.779	0.774	0.775	0.771
	-56.5	KCAS	****	****	****	****	****	****	219	218	218	217
		FF	****	****	****	****	****	****	2850	2730	2650	2550
		NAM/LB	****	****	****	****	****	****	.1570	.1625	.1680	.1731
41000		MT	****	****	****	0.781	0.778	0.775	0.771	0.766	0.761	0.757
	-56.5	KCAS	****	****	****	230	229	228	227	225	224	222
		FF	****	****	****	3110	3010	2900	2800	2710	2620	2540
		NAM/LB	****	****	****	.1441	.1484	.1535	.1577	.1622	.1665	.1708
39000		MT	0.776	0.774	0.771	0.767	0.764	0.761	0.757	0.753	0.748	0.744
	-56.5	KCAS	239	239	238	237	236	234	233	232	230	229
		FF	3340	3240	3150	3040	2960	2870	2790	2710	2640	2570
		NAM/LB	.1333	.1372	.1407	.1448	.1483	.1520	.1555	.1591	.1627	.1662
37000		MT	0.768	0.763	0.760	0.758	0.752	0.752	0.748	0.743	0.737	0.733
	-56.5	KCAS	248	246	245	245	242	243	241	239	237	236
		FF	3290	3200	3120	3060	2960	2910	2830	2760	2680	2620
		NAM/LB	.1337	.1366	.1396	.1425	.1455	.1484	.1514	.1545	.1577	.1610
35000		MT	0.754	0.750	0.747	0.744	0.740	0.736	0.730	0.727	0.721	0.716
	-54.3	KCAS	255	253	252	251	250	248	246	245	243	241
		FF	3310	3240	3170	3100	3030	2950	2870	2810	2740	2670
		NAM/LB	.1311	.1336	.1360	.1385	.1411	.1438	.1465	.1492	.1521	.1548
33000		MT	0.737	0.733	0.729	0.724	0.719	0.713	0.707	0.701	0.693	0.684
	-50.4	KCAS	260	258	257	255	253	251	249	246	243	240
		FF	3370	3300	3220	3150	3080	3000	2920	2850	2770	2680
		NAM/LB	.1273	.1295	.1317	.1340	.1361	.1384	.1408	.1432	.1458	.1483
31000		MT	0.716	0.710	0.704	0.697	0.690	0.684	0.676	0.668	0.658	0.649
	-46.4	KCAS	264	261	259	256	253	251	248	244	241	237
		FF	3410	3320	3240	3160	3080	3000	2930	2850	2760	2678
		NAM/LB	.1234	.1254	.1274	.1294	.1315	.1336	.1357	.1376	.1399	.1422
29000		MT	0.706	0.697	0.687	0.678	0.668	0.657	0.647	0.637	0.625	0.613
	-42.5	KCAS	271	268	263	260	256	251	247	243	238	233
		FF	3520	3430	3330	3240	3140	3040	2960	2870	2770	2680
		NAM/LB	.1187	.1205	.1223	.1241	.1259	.1279	.1295	.1314	.1335	.1355
27000		MT	0.671	0.665	0.658	0.651	0.643	0.634	0.625	0.615	0.605	0.594
	-38.5	KCAS	268	265	263	260	256	252	249	244	240	236
		FF	3500	3420	3340	3260	3170	3090	3000	2910	2820	2730
		NAM/LB	.1144	.1160	.1176	.1193	.1209	.1227	.1244	.1262	.1281	.1300
25000		MT	0.648	0.641	0.634	0.626	0.617	0.608	0.599	0.590	0.580	0.570
	-34.5	KCAS	270	267	263	260	256	252	248	244	240	236
		FF	3540	3460	3380	3290	3200	3110	3030	2940	2850	2760
		NAM/LB	.1101	.1116	.1130	.1145	.1160	.1176	.1192	.1209	.1226	.1243
20000		MT	0.585	0.578	0.570	0.562	0.554	0.546	0.539	0.530	0.522	0.514
	-24.6	KCAS	268	265	261	257	254	250	246	242	238	234
		FF	3640	3560	3470	3380	3290	3200	3120	3030	2940	2860
		NAM/LB	.0986	.0998	.1010	.1022	.1035	.1048	.1062	.1076	.1090	.1105

NOTE: See the **GIV Operating Manual** or **GIV Cruise Control Manual** for procedures to account for temperature deviation from ISA day and/or wind conditions.

GIV-SP Maximum Range Cruise - ISA, ctd… CCM

ALT (FT)	OAT (°C)		GROSS WEIGHT - 1000 LB									
			56	54	52	50	48	46	44	42	40	38
45000		MT	0.776	0.774	0.769	0.767	0.762	0.757	0.750	0.744	0.734	0.725
	-56.5	KCAS	208	208	206	206	204	203	200	199	196	193
		FF	2490	2390	2300	2220	2140	2060	1980	1910	1830	1750
		NAM/LB	.1791	.1858	.1921	.1984	.2049	.2110	.2173	.2237	.2304	.2375
43000		MT	0.767	0.763	0.758	0.754	0.749	0.742	0.735	0.728	0.719	0.710
	-56.5	KCAS	216	214	213	211	210	208	206	203	201	198
		FF	2470	2390	2300	2230	2150	2080	2010	1930	1860	1790
		NAM/LB	.1787	.1837	.1891	.1942	.1994	.2048	.2104	.2163	.2224	.2282
41000		MT	0.754	0.749	0.744	0.739	0.733	0.727	0.720	0.712	0.702	0.693
	-56.5	KCAS	222	220	218	217	215	213	211	208	205	202
		FF	2470	2400	2330	2250	2180	2110	2040	1970	1890	1820
		NAM/LB	.1751	.1794	.1838	.1883	.1930	.1980	.2030	.2079	.2131	.2187
39000		MT	0.739	0.733	0.726	0.720	0.713	0.706	0.697	0.688	0.676	0.665
	-56.5	KCAS	227	225	223	221	218	216	213	210	206	202
		FF	2500	2420	2340	2270	2200	2130	2060	1980	1900	1830
		NAM/LB	.1700	.1738	.1779	.1820	.1860	.1902	.1946	.1992	.2039	.2086
37000		MT	0.727	0.721	0.713	0.705	0.696	0.686	0.674	0.662	0.646	0.630
	-56.5	KCAS	234	232	229	226	223	219	215	211	206	200
		FF	2540	2470	2390	2310	2240	2160	2080	2000	1910	1820
		NAM/LB	.1644	.1679	.1711	.1747	.1784	.1823	.1861	.1901	.1942	.1985
35000		MT	0.709	0.701	0.690	0.679	0.663	0.648	0.643	0.638	0.596	0.555
	-54.3	KCAS	238	235	231	227	222	216	214	212	198	183
		FF	2590	2510	2430	2350	2250	2150	2100	2050	1860	1700
		NAM/LB	.1578	.1608	.1639	.1671	.1704	.1737	.1771	.1801	.1848	.1888
33000		MT	0.675	0.664	0.650	0.635	0.617	0.600	0.583	0.566	0.550	0.535
	-50.4	KCAS	236	232	227	221	215	208	202	196	190	185
		FF	2600	2510	2420	2330	2220	2120	2020	1920	1821	1740
		NAM/LB	.1510	.1538	.1566	.1590	.1621	.1652	.1685	.1720	.1756	.1793
31000		MT	0.648	0.628	0.615	0.603	0.589	0.575	0.560	0.545	0.529	0.513
	-46.4	KCAS	237	229	224	219	214	209	203	197	191	185
		FF	2630	2510	2420	2330	2230	2140	2050	1960	1860	1770
		NAM/LB	.1446	.1470	.1496	.1522	.1550	.1578	.1608	.1639	.1672	.1705
29000		MT	0.600	0.586	0.572	0.558	0.545	0.532	0.519	0.506	0.496	0.485
	-42.5	KCAS	228	222	217	211	206	201	196	191	187	182
		FF	2580	2480	2380	2280	2190	2100	2010	1920	1850	1770
		NAM/LB	.1379	.1400	.1426	.1451	.1477	.1503	.1531	.1560	.1590	.1622
27000		MT	0.584	0.573	0.561	0.550	0.540	0.529	0.517	0.506	0.494	0.483
	-38.5	KCAS	231	227	222	217	213	208	204	199	194	190
		FF	2640	2550	2460	2370	2290	2200	2120	2040	1950	1870
		NAM/LB	.1320	.1341	.1363	.1385	.1408	.1432	.1457	.1483	.1510	.1538
25000		MT	0.560	0.550	0.539	0.529	0.519	0.509	0.499	0.488	0.478	0.467
	-34.5	KCAS	231	227	222	218	213	209	205	200	196	191
		FF	2670	2580	2500	2410	2330	2240	2160	2080	2000	1920
		NAM/LB	.1262	.1281	.1301	.1322	.1344	.1366	.1389	.1413	.1437	.1463
20000		MT	0.506	0.498	0.490	0.482	0.474	0.466	0.458	0.451	0.444	0.438
	-24.6	KCAS	231	227	223	219	216	212	208	205	202	199
		FF	2770	2690	2610	2530	2450	2370	2300	2230	2160	2100
		NAM/LB	.1121	.1137	.1153	.1170	.1188	.1206	.1224	.1242	.1261	.1279

NOTE: See the **GIV Operating Manual** or **GIV Cruise Control Manual** for procedures to account for temperature deviation from ISA day and/or wind conditions.

GIV-SP Long Range Cruise - ISA CCM

For airplanes SN 1214 and subsequent and SN 1000 thru 1213 with ASC 190 incorporated.

ALT	OAT (°C)		GROSS WEIGHT - 1000 LB									
			76	74	72	70	68	66	64	62	60	58
45000		MT	****	****	****	****	****	****	****	****	****	0.795
	-56.5	KCAS	****	****	****	****	****	****	****	****	****	214
		FF	****	****	****	****	****	****	****	****	****	2670
		NAM/LB	****	****	****	****	****	****	****	****	****	0.1707
43000		MT	****	****	****	****	****	****	0.797	0.792	0.79	0.787
	-56.5	KCAS	****	****	****	****	****	****	225	223	223	222
		FF	****	****	****	****	****	****	2950	2820	2730	2630
		NAM/LB	****	****	****	****	****	****	0.1551	0.1611	0.1665	0.172
41000		MT	****	****	****	0.794	0.793	0.791	0.79	0.787	0.784	0.781
	-56.5	KCAS	****	****	****	235	234	234	233	232	231	230
		FF	****	****	****	3190	3090	2990	2900	2807	2730	2650
		NAM/LB	****	****	****	0.1428	0.1471	0.1521	0.1562	0.1606	0.1648	0.1691
39000		MT	0.792	0.791	0.789	0.788	0.786	0.784	0.781	0.779	0.778	0.775
	-56.5	KCAS	245	245	244	244	243	242	241	241	240	239
		FF	3440	3330	3240	3150	3070	2990	2910	2840	2770	2700
		NAM/LB	0.1322	0.1363	0.1398	0.1434	0.1469	0.1505	0.154	0.1575	0.1611	0.1646
37000		MT	0.788	0.785	0.783	0.782	0.78	0.778	0.775	0.772	0.769	0.766
	-56.5	KCAS	255	254	253	253	252	252	251	250	248	247
		FF	3420	3330	3250	3190	3110	3040	2970	2900	2830	2770
		NAM/LB	0.1322	0.1352	0.1382	0.1409	0.144	0.147	0.1499	0.1529	0.156	0.159
35000		MT	0.779	0.776	0.775	0.773	0.771	0.767	0.763	0.761	0.757	0.753
	-54.3	KCAS	264	263	263	262	261	260	258	257	256	255
		FF	3460	3380	3320	3250	3180	3110	3030	2980	2900	2830
		NAM/LB	0.1298	0.1322	0.1347	0.1371	0.1396	0.1423	0.145	0.1475	0.1504	0.1532
30000		MT	0.749	0.745	0.741	0.737	0.731	0.725	0.717	0.710	0.703	0.695
	-44.4	KCAS	283	281	280	278	276	273	270	267	264	261
		FF	3685	3615	3540	3470	3390	3310	3216	3135	3055	2965
		NAM/LB	0.1199	0.1217	0.1235	0.1253	0.1273	0.1293	0.1315	0.1337	0.1358	0.1379
25000		MT	0.7	0.695	0.688	0.681	0.673	0.665	0.656	0.647	0.638	0.628
	-34.5	KCAS	293	290	287	284	280	277	273	269	265	261
		FF	3870	3790	3700	3620	3530	3440	3350	3260	3160	3070
		NAM/LB	0.109	0.1105	0.1119	0.1134	0.1149	0.1164	0.118	0.1197	0.1213	0.1231
20000		MT	0.641	0.632	0.624	0.615	0.607	0.598	0.59	0.581	0.572	0.563
	-24.6	KCAS	295	291	287	283	278	274	270	266	262	258
		FF	4030	3930	3830	3740	3640	3540	3450	3350	3260	3160
		NAM/LB	0.0976	0.0988	0.1	0.1012	0.1025	0.1038	0.1051	0.1065	0.1079	0.1094
15000		MT	0.575	0.567	0.56	0.552	0.545	0.538	0.53	0.524	0.517	0.51
	-14.7	KCAS	291	287	283	279	275	271	267	264	260	257
		FF	4133	4031	3931	3831	3735	3641	3550	3463	3375	3290
		NAM/LB	0.0872	0.0882	0.0892	0.0903	0.0914	0.0925	0.0936	0.0947	0.0959	0.0971
10000		MT	0.452	0.452	0.452	0.452	0.452	0.452	0.452	0.452	0.452	0.452
	-4.8	KCAS	250	250	250	250	250	250	250	250	250	250
		FF	3675	3634	3593	3553	3514	3480	3443	3410	3379	3347
		NAM/LB	0.0785	0.0794	0.0803	0.0812	0.0821	0.0829	0.0838	0.0846	0.0854	0.0862
5000		MT	0.413	0.413	0.413	0.413	0.413	0.413	0.413	0.413	0.413	0.413
	5.1	KCAS	250	250	250	250	250	250	250	250	250	250
		FF	3868	3830	3792	3755	3723	3688	3652	3623	3594	3565
		NAM/LB	0.0694	0.0701	0.0708	0.0715	0.0721	0.0728	0.0735	0.0741	0.0747	0.0753
0		MT	0.378	0.378	0.378	0.378	0.378	0.378	0.378	0.378	0.378	0.378
	15	KCAS	250	250	250	250	250	250	250	250	250	250
		FF	4119	4079	4046	4007	3975	3944	3913	3877	3847	3823
		NAM/LB	0.0607	0.0613	0.0618	0.0624	0.0629	0.0634	0.0639	0.0645	0.065	0.0654

NOTE: See the **GIV Operating Manual** or **GIV Cruise Control Manual** for procedures to account for temperature deviation from ISA day and/or wind conditions.

NOTE: Airspeed restricted to 250 KCAS for altitudes of 10,000 ft and below.

GIV-SP Long Range Cruise - ISA, ctd… CCM

ALT	OAT (°C)		GROSS WEIGHT - 1000 LB									
			56	54	52	50	48	46	44	42	40	38
45000		MT	0.793	0.791	0.788	0.785	0.782	0.778	0.774	0.77	0.764	0.757
	-56.5	KCAS	213	213	212	211	210	209	208	206	205	203
		FF	2560	2460	2380	2290	2210	2140	2070	2010	1930	1850
		NAM/LB	0.177	0.1845	0.1904	0.1964	0.2029	0.209	0.2145	0.22	0.2275	0.2351
43000		MT	0.785	0.783	0.78	0.776	0.773	0.77	0.765	0.761	0.755	0.75
	-56.5	KCAS	221	221	220	218	217	217	215	214	212	210
		FF	2550	2470	2390	2320	2250	2180	2110	2050	1970	1900
		NAM/LB	0.177	0.1819	0.1872	0.1922	0.1976	0.203	0.2083	0.2135	0.2201	0.2259
41000		MT	0.779	0.777	0.773	0.769	0.765	0.761	0.755	0.749	0.742	0.734
	-56.5	KCAS	230	229	228	227	225	224	222	220	218	215
		FF	2590	2520	2440	2370	2300	2240	2160	2090	2020	1940
		NAM/LB	0.1731	0.177	0.1817	0.1864	0.191	0.1955	0.2007	0.2058	0.2109	0.2165
39000		MT	0.771	0.767	0.763	0.759	0.754	0.748	0.741	0.734	0.726	0.716
	-56.5	KCAS	238	236	235	234	232	230	228	225	223	219
		FF	2630	2550	2490	2430	2350	2280	2210	2130	2060	1990
		NAM/LB	0.1683	0.1721	0.176	0.1798	0.1841	0.1883	0.1927	0.1972	0.2018	0.2065
37000		MT	0.763	0.759	0.752	0.746	0.74	0.734	0.725	0.716	0.705	0.691
	-56.5	KCAS	246	245	242	240	238	236	233	230	226	221
		FF	2700	2640	2540	2470	2400	2340	2260	2180	2100	2020
		NAM/LB	0.162	0.165	0.1694	0.173	0.1767	0.1803	0.1843	0.1882	0.1923	0.1965
35000		MT	0.748	0.743	0.737	0.73	0.723	0.714	0.704	0.687	0.665	0.638
	-54.3	KCAS	253	251	248	246	243	240	236	230	222	213
		FF	2760	2690	2620	2540	2470	2390	2310	2210	2090	1970
		NAM/LB	0.1562	0.1592	0.1623	0.1655	0.1687	0.172	0.1754	0.1791	0.1829	0.1869
30000		MT	0.685	0.675	0.663	0.651	0.637	0.625	0.608	0.593	0.576	0.560
	-44.4	KCAS	257	253	248	243	238	233	226	220	214	207
		FF	2880	2795	2700	2605	2505	2415	2310	2210	2105	2000
		NAM/LB	0.1401	0.1424	0.1448	0.1472	0.1498	0.1524	0.1553	0.1583	0.1614	0.1647
25000		MT	0.618	0.607	0.595	0.584	0.573	0.562	0.551	0.539	0.528	0.517
	-34.5	KCAS	256	251	246	241	237	232	227	222	217	212
		FF	2980	2880	2780	2690	2590	2500	2410	2320	2230	2150
		NAM/LB	0.1249	0.1268	0.1288	0.1309	0.133	0.1352	0.1375	0.1398	0.1423	0.1448
20000		MT	0.554	0.546	0.537	0.528	0.519	0.511	0.503	0.494	0.487	0.48
	-24.6	KCAS	254	249	245	241	237	233	229	225	222	218
		FF	3070	2980	2890	2800	2710	2630	2550	2470	2400	2330
		NAM/LB	0.111	0.1126	0.1142	0.1159	0.1176	0.1194	0.1212	0.123	0.1248	0.1266
15000		MT	0.503	0.497	0.491	0.484	0.478	0.472	0.467	0.461	0.455	0.45
	-14.7	KCAS	253	250	247	244	241	237	235	232	229	226
		FF	3207	3128	3051	2974	2901	2829	2763	2696	2634	2575
		NAM/LB	0.0983	0.0995	0.1007	0.102	0.1033	0.1046	0.1058	0.1071	0.1083	0.1095
10000		MT	0.452	0.452	0.452	0.452	0.452	0.448	0.443	0.438	0.433	0.428
	-4.8	KCAS	250	250	250	250	250	247	245	242	239	237
		FF	3316	3290	3260	3235	3213	3150	3089	3026	2964	2907
		NAM/LB	0.087	0.0877	0.0885	0.0892	0.0898	0.0907	0.0915	0.0924	0.0933	0.0941
5000		MT	0.413	0.413	0.413	0.413	0.413	0.413	0.413	0.413	0.411	0.406
	5.1	KCAS	250	250	250	250	250	250	250	250	249	246
		FF	3537	3509	3482	3459	3433	3411	3390	3373	3328	3266
		NAM/LB	0.0759	0.0765	0.0771	0.0776	0.0782	0.0787	0.0792	0.0796	0.0802	0.0808
0		MT	0.378	0.378	0.378	0.378	0.378	0.378	0.378	0.378	0.378	0.378
	15	KCAS	250	250	250	250	250	250	250	250	250	250
		FF	3794	3766	3743	3715	3693	3672	3650	3634	3613	3598
		NAM/LB	0.0659	0.0664	0.0668	0.0673	0.0677	0.0681	0.0685	0.0688	0.0692	0.0695

NOTE: See the **GIV Operating Manual** or **GIV Cruise Control Manual** for procedures to account for temperature deviation from ISA day and/or wind conditions.

NOTE: Airspeed restricted to 250 KCAS for altitudes of 10,000 ft and below.

GIV-SP Twin Engine Cruise: Mach 0.77 - ISA CCM

For airplanes SN 1214 and subsequent and SN 1000 thru 1213 with ASC 190 incorporated.

ALT (FT)	OAT (°C)		GROSS WEIGHT - 1000 LB 76	74	72	70	68	66	64	62	60	58
45000		MT	****	****	****	****	****	****	****	****	****	0.770
	441.6	KCAS	****	****	****	****	****	****	****	****	****	206
		FF	****	****	****	****	****	****	****	****	****	2570
	-56.5	NAM/LB	****	****	****	****	****	****	****	****	****	.1721
43000		MT	****	****	****	****	****	****	0.770	0.770	0.770	0.770
	441.6	KCAS	****	****	****	****	****	****	216	216	216	216
		FF	****	****	****	****	****	****	2810	2720	2630	2550
	-56.5	NAM/LB	****	****	****	****	****	****	.1569	.1622	.1679	.1732
41000		MT	****	****	****	0.770	0.770	0.770	0.770	0.770	0.770	0.770
	441.6	KCAS	****	****	****	227	227	227	227	227	227	227
		FF	****	****	****	3070	2970	2880	2800	2720	2660	2590
	-56.5	NAM/LB	****	****	****	.1439	.1486	.1534	.1577	.1621	.1663	.1704
39000		MT	0.770	0.770	0.770	0.770	0.770	0.770	0.770	0.770	0.770	0.770
	441.6	KCAS	238	238	238	238	238	238	238	238	238	238
		FF	3310	3220	3140	3050	2980	2910	2850	2790	2730	2670
	-56.5	NAM/LB	.1333	.1372	.1404	.1447	.1483	.1518	.1551	.1584	.1620	.1652
37000		MT	0.770	0.770	0.770	0.770	0.770	0.770	0.770	0.770	0.770	0.770
	441.6	KCAS	249	249	249	249	249	249	249	249	249	249
		FF	3310	3240	3170	3110	3050	2990	2940	2880	2830	2790
	-56.5	NAM/LB	.1336	.1365	.1393	.1421	.1448	.1478	.1505	.1532	.1558	.1584
35000		MT	0.770	0.770	0.770	0.770	0.770	0.770	0.770	0.770	0.770	0.770
	443.8	KCAS	261	261	261	261	261	261	261	261	261	261
		FF	3400	3340	3280	3230	3170	3130	3080	3040	2990	2940
	-54.3	NAM/LB	.1307	.1329	.1354	.1376	.1398	.1420	.1442	.1462	.1483	.1510
33000		MT	0.770	0.770	0.770	0.770	0.770	0.770	0.770	0.770	0.770	0.770
	447.8	KCAS	273	273	273	273	273	273	273	273	273	273
		FF	3560	3510	3460	3420	3360	3310	3270	3230	3200	3160
	-50.4	NAM/LB	.1258	.1276	.1294	.1311	.1334	.1351	.1368	.1385	.1401	.1418
31000		MT	0.770	0.770	0.770	0.770	0.770	0.770	0.770	0.770	0.770	0.770
	451.8	KCAS	285	285	285	285	285	285	285	285	285	285
		FF	3750	3710	3660	3620	3580	3540	3500	3450	3420	3390
	-46.4	NAM/LB	.1204	.1219	.1233	.1247	.1261	.1275	.1289	.1309	.1322	.1335
29000		MT	0.770	0.770	0.770	0.770	0.770	0.770	0.770	0.770	0.770	0.770
	455.7	KCAS	298	298	298	298	298	298	298	298	298	298
		FF	3960	3920	3880	3850	3810	3770	3720	3690	3660	3640
	-42.5	NAM/LB	.1150	.1162	.1173	.1185	.1196	.1208	.1224	.1234	.1244	.1253
27000		MT	0.770	0.770	0.770	0.770	0.770	0.770	0.770	0.770	0.770	0.770
	459.6	KCAS	311	311	311	311	311	311	311	311	311	311
		FF	4250	4210	4170	4140	4110	4080	4050	4020	4000	3980
	-38.5	NAM/LB	.1082	.1092	.1101	.1110	.1119	.1127	.1135	.1142	.1149	.1156
25000		MT	0.770	0.770	0.770	0.770	0.770	0.770	0.770	0.770	0.770	0.770
	463.5	KCAS	324	324	324	324	324	324	324	324	324	324
		FF	4530	4500	4470	4440	4410	4390	4370	4340	4320	4310
	-34.5	NAM/LB	.1022	.1030	.1037	.1043	.1050	.1056	.1062	.1067	.1072	.1077
20000		MT	****	****	****	****	****	****	****	****	****	****
	473.0	KCAS	****	****	****	****	****	****	****	****	****	****
		FF	****	****	****	****	****	****	****	****	****	****
	-24.6	NAM/LB	****	****	****	****	****	****	****	****	****	****

NOTE: See the **GIV Operating Manual** or **GIV Cruise Control Manual** for procedures to account for temperature deviation from ISA day and/or wind conditions.

GIV-SP Twin Engine Cruise - Mach 0.77- ISA, ctd… CCM

ALT (FT)	OAT (°C)		GROSS WEIGHT - 1000 LB									
			56	54	52	50	48	46	44	42	40	38
45000		MT	0.770	0.770	0.770	0.770	0.770	0.770	0.770	0.770	0.770	0.770
	441.6	KCAS	206	206	206	206	206	206	206	206	206	206
		FF	2470	2380	2300	2230	2160	2100	2050	1990	1940	1900
	-56.5	NAM/LB	.1789	.1857	.1922	.1982	.2045	.2101	.2155	.2218	.2273	.2326
43000		MT	0.770	0.770	0.770	0.770	0.770	0.770	0.770	0.770	0.770	0.770
	441.6	KCAS	216	216	216	216	216	216	216	216	216	216
		FF	2470	2410	2340	2290	2230	2180	2130	2080	2040	1990
	-56.5	NAM/LB	.1785	.1834	.1885	.1931	.1982	.2029	.2075	.2119	.2163	.2216
41000		MT	0.770	0.770	0.770	0.770	0.770	0.770	0.770	0.770	0.770	0.770
	441.6	KCAS	227	227	227	227	227	227	227	227	227	227
		FF	2530	2480	2420	2370	2320	2280	2240	2190	2150	2110
	-56.5	NAM/LB	.1744	.1781	.1825	.1864	.1901	.1938	.1974	.2019	.2055	.2089
39000		MT	0.770	0.770	0.770	0.770	0.770	0.770	0.770	0.770	0.770	0.770
	441.6	KCAS	238	238	238	238	238	238	238	238	238	238
		FF	2620	2570	2530	2480	2430	2390	2360	2320	2290	2260
	-56.5	NAM/LB	.1685	.1716	.1747	.1777	.1815	.1845	.1875	.1904	.1932	.1958
37000		MT	0.770	0.770	0.770	0.770	0.770	0.770	0.770	0.770	0.770	0.770
	441.6	KCAS	249	249	249	249	249	249	249	249	249	249
		FF	2740	2700	2650	2610	2570	2540	2510	2480	2450	2430
	-56.5	NAM/LB	.1609	.1634	.1666	.1691	.1716	.1740	.1763	.1784	.1804	.1821
35000		MT	0.770	0.770	0.770	0.770	0.770	0.770	0.770	0.770	0.770	0.770
	443.8	KCAS	261	261	261	261	261	261	261	261	261	261
		FF	2900	2860	2820	2790	2760	2730	2700	2670	2650	2630
	-54.3	NAM/LB	.1531	.1552	.1572	.1591	.1610	.1628	.1644	.1664	.1676	.1687
33000		MT	0.770	0.770	0.770	0.770	0.770	0.770	0.770	0.770	0.770	0.770
	447.8	KCAS	273	273	273	273	273	273	273	273	273	273
		FF	3120	3090	3060	3010	2990	2970	2950	2930	2910	2900
	-50.4	NAM/LB	.1434	.1450	.1465	.1486	.1498	.1510	.1520	.1529	.1538	.1545
31000		MT	0.770	0.770	0.770	0.770	0.770	0.770	0.770	0.770	0.770	0.770
	451.8	KCAS	285	285	285	285	285	285	285	285	285	285
		FF	3350	3330	3300	3280	3260	3240	3220	3210	3190	3180
	-46.4	NAM/LB	.1347	.1358	.1369	.1378	.1387	.1394	.1402	.1408	.1415	.1420
29000		MT	0.770	0.770	0.770	0.770	0.770	0.770	0.770	0.770	0.770	0.770
	455.7	KCAS	298	298	298	298	298	298	298	298	298	298
		FF	3610	3590	3570	3560	3540	3520	3510	3500	3490	3480
	-42.5	NAM/LB	.1261	.1269	.1276	.1282	.1288	.1293	.1298	.1303	.1307	.1311
27000		MT	0.770	0.770	0.770	0.770	0.770	0.770	0.770	0.770	0.770	0.770
	459.6	KCAS	311	311	311	311	311	311	311	311	311	311
		FF	3960	3940	3920	3900	3890	3870	3860	3840	3830	3820
	-38.5	NAM/LB	.1162	.1167	.1172	.1177	.1182	.1187	.1191	.1195	.1200	.1204
25000		MT	0.770	0.770	0.770	0.770	0.770	0.770	0.770	0.770	0.770	0.770
	463.5	KCAS	324	324	324	324	324	324	324	324	324	324
		FF	4290	4270	4250	4240	4220	4210	4190	4170	4160	4140
	-34.5	NAM/LB	.1081	.1086	.1090	.1094	.1098	.1102	.1106	.1110	.1114	.1118
20000		MT	****	****	****	****	****	****	****	****	****	****
	473.0	KCAS	****	****	****	****	****	****	****	****	****	****
		FF	****	****	****	****	****	****	****	****	****	****
	-24.6	NAM/LB	****	****	****	****	****	****	****	****	****	****

NOTE: See the **GIV Operating Manual** or **GIV Cruise Control Manual** for procedures to account for temperature deviation from ISA day and/or wind conditions.

GIV-SP Twin Engine Cruise: Mach 0.80 - ISA CCM

For airplanes SN 1214 and subsequent and SN 1000 thru 1213 with ASC 190 incorporated.

ALT (FT)	OAT (°C)		GROSS WEIGHT - 1000 LB 76	74	72	70	68	66	64	62	60	58
45000		MT	****	****	****	****	****	****	****	****	****	0.800
	458.9	KCAS	****	****	****	****	****	****	****	****	****	216
		FF	****	****	****	****	****	****	****	****	****	2710
	-56.5	NAM/LB	****	****	****	****	****	****	****	****	****	.1694
43000		MT	****	****	****	****	****	****	0.800	0.800	0.800	0.800
	458.9	KCAS	****	****	****	****	****	****	226	226	226	226
		FF	****	****	****	****	****	****	2970	2880	2790	2720
	-56.5	NAM/LB	****	****	****	****	****	****	.1543	.1592	.1642	.1688
41000		MT	****	****	****	0.800	0.800	0.800	0.800	0.800	0.800	0.800
	458.9	KCAS	****	****	****	237	237	237	237	237	237	237
		FF	****	****	****	3240	3160	3060	2980	2920	2850	2790
	-56.5	NAM/LB	****	****	****	.1415	.1451	.1498	.1537	.1572	.1608	.1644
39000		MT	0.800	0.800	0.800	0.800	0.800	0.800	0.800	0.800	0.800	0.800
	458.9	KCAS	248	248	248	248	248	248	248	248	248	248
		FF	3520	3410	3340	3260	3190	3130	3070	3010	2940	2890
	-56.5	NAM/LB	.1305	.1344	.1375	.1407	.1436	.1468	.1497	.1526	.1559	.1587
37000		MT	0.800	0.800	0.800	0.800	0.800	0.800	0.800	0.800	0.800	0.800
	458.9	KCAS	260	260	260	260	260	260	260	260	260	260
		FF	3540	3470	3410	3350	3290	3230	3170	3130	3080	3040
	-56.5	NAM/LB	.1296	.1321	.1346	.1370	.1394	.1422	.1445	.1467	.1489	.1509
35000		MT	0.800	0.800	0.800	0.800	0.800	0.800	0.800	0.800	0.800	0.800
	461.1	KCAS	272	272	272	272	272	272	272	272	272	272
		FF	3660	3610	3540	3490	3440	3400	3360	3320	3280	3230
	-54.3	NAM/LB	.1258	.1278	.1301	.1321	.1339	.1356	.1374	.1390	.1407	.1429
33000		MT	0.800	0.800	0.800	0.800	0.800	0.800	0.800	0.800	0.800	0.800
	465.3	KCAS	284	284	284	284	284	284	284	284	284	284
		FF	3860	3810	3770	3730	3670	3630	3590	3550	3520	3480
	-50.4	NAM/LB	.1204	.1220	.1234	.1249	.1268	.1281	.1295	.1309	.1323	.1336
31000		MT	0.800	0.800	0.800	0.800	0.800	0.800	0.800	0.800	0.800	0.800
	469.4	KCAS	297	297	297	297	297	297	297	297	297	297
		FF	4100	4050	4010	3970	3930	3890	3850	3810	3780	3750
	-46.4	NAM/LB	.1146	.1158	.1170	.1182	.1194	.1206	.1218	.1231	.1242	.1252
29000		MT	0.800	0.800	0.800	0.800	0.800	0.800	0.800	0.800	0.800	0.800
	473.5	KCAS	311	311	311	311	311	311	311	311	311	311
		FF	4350	4320	4280	4240	4210	4170	4130	4100	4080	4050
	-42.5	NAM/LB	.1087	.1097	.1106	.1116	.1125	.1134	.1146	.1154	.1162	.1169
27000		MT	0.800	0.800	0.800	0.800	0.800	0.800	0.800	0.800	0.800	0.800
	477.5	KCAS	324	324	324	324	324	324	324	324	324	324
		FF	4670	4630	4600	4560	4530	4500	4470	4440	4420	4400
	-38.5	NAM/LB	.1023	.1031	.1039	.1047	.1054	.1062	.1068	.1075	.1081	.1086
25000		MT	0.800	0.800	0.800	0.800	0.800	0.800	0.800	0.800	0.800	0.800
	481.6	KCAS	338	338	338	338	338	338	338	338	338	338
		FF	4990	4960	4930	4900	4860	4830	4810	4780	4760	4740
	-34.5	NAM/LB	.0965	.0971	.0977	.0984	.0990	.0997	.1002	.1006	.1011	.1015
20000		MT	****	****	****	****	****	****	****	****	****	****
	491.5	KCAS	****	****	****	****	****	****	****	****	****	****
		FF	****	****	****	****	****	****	****	****	****	****
	-24.6	NAM/LB	****	****	****	****	****	****	****	****	****	****

NOTE: See the **GIV Operating Manual** or **GIV Cruise Control Manual** for procedures to account for temperature deviation from ISA day and/or wind conditions.

GIV-SP Twin Engine Cruise - Mach 0.80 - ISA, ctd… CCM

ALT (FT)	OAT (°C)		GROSS WEIGHT - 1000 LB									
			56	54	52	50	48	46	44	42	40	38
45000		MT	0.800	0.800	0.800	0.800	0.800	0.800	0.800	0.800	0.800	0.800
	458.9	KCAS	216	216	216	216	216	216	216	216	216	216
		FF	2620	2530	2450	2390	2320	2270	2220	2160	2110	2070
	-56.5	NAM/LB	.1751	.1816	.1870	.1919	.1974	.2023	.2070	.2126	.2170	.2212
43000		MT	0.800	0.800	0.800	0.800	0.800	0.800	0.800	0.800	0.800	0.800
	458.9	KCAS	226	226	226	226	226	226	226	226	226	226
		FF	2650	2590	2530	2470	2410	2360	2320	2280	2240	2190
	-56.5	NAM/LB	.1729	.1773	.1817	.1858	.1905	.1944	.1980	.2015	.2050	.2093
41000		MT	0.800	0.800	0.800	0.800	0.800	0.800	0.800	0.800	0.800	0.800
	458.9	KCAS	237	237	237	237	237	237	237	237	237	237
		FF	2730	2680	2620	2570	2530	2490	2450	2410	2370	2340
	-56.5	NAM/LB	.1679	.1711	.1751	.1783	.1812	.1841	.1871	.1907	.1935	.1962
39000		MT	0.800	0.800	0.800	0.800	0.800	0.800	0.800	0.800	0.800	0.800
	458.9	KCAS	248	248	248	248	248	248	248	248	248	248
		FF	2840	2800	2760	2720	2670	2630	2600	2570	2540	2510
	-56.5	NAM/LB	.1613	.1639	.1663	.1687	.1718	.1742	.1766	.1788	.1810	.1831
37000		MT	0.800	0.800	0.800	0.800	0.800	0.800	0.800	0.800	0.800	0.800
	458.9	KCAS	260	260	260	260	260	260	260	260	260	260
		FF	3000	2960	2910	2880	2840	2810	2780	2750	2730	2700
	-56.5	NAM/LB	.1529	.1549	.1576	.1595	.1615	.1633	.1651	.1668	.1684	.1697
35000		MT	0.800	0.800	0.800	0.800	0.800	0.800	0.800	0.800	0.800	0.800
	461.1	KCAS	272	272	272	272	272	272	272	272	272	272
		FF	3190	3160	3120	3090	3060	3030	3010	2980	2960	2950
	-54.3	NAM/LB	.1446	.1461	.1478	.1493	.1508	.1522	.1534	.1548	.1557	.1565
33000		MT	0.800	0.800	0.800	0.800	0.800	0.800	0.800	0.800	0.800	0.800
	465.3	KCAS	284	284	284	284	284	284	284	284	284	284
		FF	3450	3420	3390	3350	3330	3310	3290	3270	3260	3240
	-50.4	NAM/LB	.1349	.1362	.1374	.1388	.1398	.1407	.1414	.1422	.1428	.1434
31000		MT	0.800	0.800	0.800	0.800	0.800	0.800	0.800	0.800	0.800	0.800
	469.4	KCAS	297	297	297	297	297	297	297	297	297	297
		FF	3720	3690	3670	3640	3630	3610	3590	3570	3560	3550
	-46.4	NAM/LB	.1262	.1271	.1280	.1288	.1295	.1301	.1307	.1313	.1318	.1323
29000		MT	0.800	0.800	0.800	0.800	0.800	0.800	0.800	0.800	0.800	0.800
	473.5	KCAS	311	311	311	311	311	311	311	311	311	311
		FF	4030	4010	3990	3980	3960	3950	3930	3920	3910	3900
	-42.5	NAM/LB	.1175	.1181	.1186	.1191	.1196	.1200	.1204	.1207	.1211	.1214
27000		MT	0.800	0.800	0.800	0.800	0.800	0.800	0.800	0.800	0.800	0.800
	477.5	KCAS	324	324	324	324	324	324	324	324	324	324
		FF	4380	4360	4340	4320	4300	4280	4270	4250	4240	4220
	-38.5	NAM/LB	.1091	.1096	.1101	.1106	.1111	.1115	.1119	.1123	.1127	.1131
25000		MT	0.800	0.800	0.800	0.800	0.800	0.800	0.800	0.800	0.800	0.800
	481.6	KCAS	338	338	338	338	338	338	338	338	338	338
		FF	4720	4700	4680	4660	4640	4620	4600	4580	4570	4550
	-34.5	NAM/LB	.1020	.1024	.1029	.1033	.1037	.1042	.1046	.1050	.1055	.1059
20000		MT	****	****	****	****	****	****	****	****	****	****
	491.5	KCAS	****	****	****	****	****	****	****	****	****	****
		FF	****	****	****	****	****	****	****	****	****	****
	-24.6	NAM/LB	****	****	****	****	****	****	****	****	****	****

NOTE: See the **GIV Operating Manual** or **GIV Cruise Control Manual** for procedures to account for temperature deviation from ISA day and/or wind conditions.

GIV-SP Twin Engine Cruise: Mach 0.83 – ISA CCM

For airplanes SN 1214 and subsequent and SN 1000 thru 1213 with ASC 190 incorporated.

ALT (FT)	OAT (°C)		GROSS WEIGHT - 1000 LB									
			76	74	72	70	68	66	64	62	60	58
45000		MT	****	****	****	****	****	****	****	****	****	****
	476.1	KCAS	****	****	****	****	****	****	****	****	****	****
		FF	****	****	****	****	****	****	****	****	****	****
	-56.5	NAM/LB	****	****	****	****	****	****	****	****	****	****
43000		MT	****	****	****	****	****	****	****	****	****	0.830
	476.1	KCAS	****	****	****	****	****	****	****	****	****	235
		FF	****	****	****	****	****	****	****	****	****	3230
	-56.5	NAM/LB	****	****	****	****	****	****	****	****	****	.1474
41000		MT	****	****	****	****	****	****	0.830	0.830	0.830	0.830
	476.1	KCAS	****	****	****	****	****	****	247	247	247	247
		FF	****	****	****	****	****	****	3540	3430	3320	3240
	-56.5	NAM/LB	****	****	****	****	****	****	.1345	.1390	.1432	.1471
39000		MT	****	****	****	0.830	0.830	0.830	0.830	0.830	0.830	0.830
	476.1	KCAS	****	****	****	258	258	258	258	258	258	258
		FF	****	****	****	3860	3740	3640	3560	3470	3410	3340
	-56.5	NAM/LB	****	****	****	.1234	.1273	.1307	.1339	.1370	.1396	.1424
37000		MT	0.830	0.830	0.830	0.830	0.830	0.830	0.830	0.830	0.830	0.830
	476.1	KCAS	271	271	271	271	271	271	271	271	271	271
		FF	4170	4060	3970	3880	3800	3740	3670	3610	3560	3510
	-56.5	NAM/LB	.1142	.1173	.1200	.1227	.1252	.1273	.1297	.1318	.1337	.1356
35000		MT	0.830	0.830	0.830	0.830	0.830	0.830	0.830	0.830	0.830	0.830
	478.4	KCAS	283	283	283	283	283	283	283	283	283	283
		FF	4240	4160	4110	4040	3980	3930	3880	3830	3780	3750
	-54.3	NAM/LB	.1128	.1149	.1165	.1185	.1201	.1218	.1234	.1250	.1266	.1277
33000		MT	0.830	0.830	0.830	0.830	0.830	0.830	0.830	0.830	0.830	0.830
	482.7	KCAS	296	296	296	296	296	296	296	296	296	296
		FF	4430	4370	4320	4260	4240	4190	4150	4100	4060	4010
	-50.4	NAM/LB	.1090	.1104	.1119	.1132	.1138	.1152	.1165	.1178	.1190	.1202
31000		MT	0.830	0.830	0.830	0.830	0.830	0.830	0.830	0.830	0.830	0.830
	487.0	KCAS	310	310	310	310	310	310	310	310	310	310
		FF	4690	4630	4580	4530	4480	4440	4390	4400	4350	4310
	-46.4	NAM/LB	.1039	.1051	.1063	.1075	.1087	.1098	.1109	.1108	.1118	.1129
29000		MT	0.830	0.830	0.830	0.830	0.830	0.830	0.830	0.830	0.830	0.830
	491.3	KCAS	323	323	323	323	323	323	323	323	323	323
		FF	5020	4980	4930	4890	4850	4810	4800	4760	4730	4700
	-42.5	NAM/LB	.0978	.0987	.0996	.1004	.1013	.1022	.1024	.1031	.1038	.1045
27000		MT	0.830	0.830	0.830	0.830	0.830	0.830	0.830	0.830	0.830	0.830
	495.5	KCAS	337	337	337	337	337	337	337	337	337	337
		FF	5300	5260	5220	5180	5140	5090	5060	5020	4990	4970
	-38.5	NAM/LB	.0934	.0942	.0949	.0957	.0965	.0973	.0980	.0986	.0992	.0998
25000		MT	****	****	****	****	****	****	****	****	****	****
	499.6	KCAS	****	****	****	****	****	****	****	****	****	****
		FF	****	****	****	****	****	****	****	****	****	****
	-34.5	NAM/LB	****	****	****	****	****	****	****	****	****	****
20000		MT	****	****	****	****	****	****	****	****	****	****
	509.9	KCAS	****	****	****	****	****	****	****	****	****	****
		FF	****	****	****	****	****	****	****	****	****	****
	-24.6	NAM/LB	****	****	****	****	****	****	****	****	****	****

NOTE: See the **GIV Operating Manual** or **GIV Cruise Control Manual** for procedures to account for temperature deviation from ISA day and/or wind conditions.

GIV-SP Twin Engine Cruise - Mach 0.83 - ISA, ctd… CCM

ALT	OAT		GROSS WEIGHT - 1000 LB									
(FT)	(°C)		56	54	52	50	48	46	44	42	40	38
45000		MT	****	****	0.830	0.830	0.830	0.830	0.830	0.830	0.830	0.830
	476.1	KCAS	****	****	225	225	225	225	225	225	225	225
		FF	****	****	2900	2790	2690	2620	2540	2490	2440	2390
	-56.5	NAM/LB	****	****	.1641	.1708	.1767	.1820	.1874	.1911	.1952	.1992
43000		MT	0.830	0.830	0.830	0.830	0.830	0.830	0.830	0.830	0.830	0.830
	476.1	KCAS	235	235	235	235	235	235	235	235	235	235
		FF	3100	3010	2920	2840	2780	2730	2670	2620	2580	2540
	-56.5	NAM/LB	.1535	.1581	.1629	.1674	.1710	.1746	.1781	.1814	.1847	.1871
41000		MT	0.830	0.830	0.830	0.830	0.830	0.830	0.830	0.830	0.830	0.830
	476.1	KCAS	247	247	247	247	247	247	247	247	247	247
		FF	3150	3080	3030	2970	2920	2870	2820	2790	2750	2710
	-56.5	NAM/LB	.1509	.1546	.1572	.1602	.1629	.1657	.1685	.1705	.1730	.1754
39000		MT	0.830	0.830	0.830	0.830	0.830	0.830	0.830	0.830	0.830	0.830
	476.1	KCAS	258	258	258	258	258	258	258	258	258	258
		FF	3290	3230	3180	3140	3100	3060	3020	2980	2940	2910
	-56.5	NAM/LB	.1449	.1472	.1496	.1518	.1535	.1557	.1578	.1599	.1619	.1637
37000		MT	0.830	0.830	0.830	0.830	0.830	0.830	0.830	0.830	0.830	0.830
	476.1	KCAS	271	271	271	271	271	271	271	271	271	271
		FF	3460	3410	3380	3340	3300	3260	3220	3190	3160	3140
	-56.5	NAM/LB	.1375	.1395	.1408	.1425	.1442	.1459	.1476	.1492	.1506	.1519
35000		MT	0.830	0.830	0.830	0.830	0.830	0.830	0.830	0.830	0.830	0.830
	478.4	KCAS	283	283	283	283	283	283	283	283	283	283
		FF	3710	3660	3620	3590	3550	3520	3490	3480	3450	3430
	-54.3	NAM/LB	.1291	.1305	.1320	.1334	.1348	.1360	.1372	.1376	.1385	.1393
33000		MT	0.830	0.830	0.830	0.830	0.830	0.830	0.830	0.830	0.830	0.830
	482.7	KCAS	296	296	296	296	296	296	296	296	296	296
		FF	3970	3930	3890	3890	3860	3840	3810	3790	3770	3750
	-50.4	NAM/LB	.1215	.1228	.1240	.1240	.1249	.1258	.1266	.1274	.1282	.1289
31000		MT	0.830	0.830	0.830	0.830	0.830	0.830	0.830	0.830	0.830	0.830
	487.0	KCAS	310	310	310	310	310	310	310	310	310	310
		FF	4280	4240	4210	4190	4160	4130	4110	4080	4070	4050
	-46.4	NAM/LB	.1138	.1147	.1156	.1163	.1171	.1178	.1186	.1192	.1198	.1203
29000		MT	0.830	0.830	0.830	0.830	0.830	0.830	0.830	0.830	0.830	0.830
	491.3	KCAS	323	323	323	323	323	323	323	323	323	323
		FF	4670	4650	4620	4600	4580	4560	4540	4520	4510	4490
	-42.5	NAM/LB	.1051	.1057	.1063	.1068	.1073	.1078	.1082	.1086	.1090	.1094
27000		MT	0.830	0.830	0.830	0.830	0.830	0.830	0.830	0.830	0.830	0.830
	495.5	KCAS	337	337	337	337	337	337	337	337	337	337
		FF	4940	4910	4880	4850	4830	4810	4790	4770	4750	4730
	-38.5	NAM/LB	.1004	.1009	.1015	.1021	.1026	.1031	.1035	.1039	.1044	.1048
25000		MT	****	****	****	****	****	****	****	****	****	****
	499.6	KCAS	****	****	****	****	****	****	****	****	****	****
		FF	****	****	****	****	****	****	****	****	****	****
	-34.5	NAM/LB	****	****	****	****	****	****	****	****	****	****
20000		MT	****	****	****	****	****	****	****	****	****	****
	509.9	KCAS	****	****	****	****	****	****	****	****	****	****
		FF	****	****	****	****	****	****	****	****	****	****
	-24.6	NAM/LB	****	****	****	****	****	****	****	****	****	****

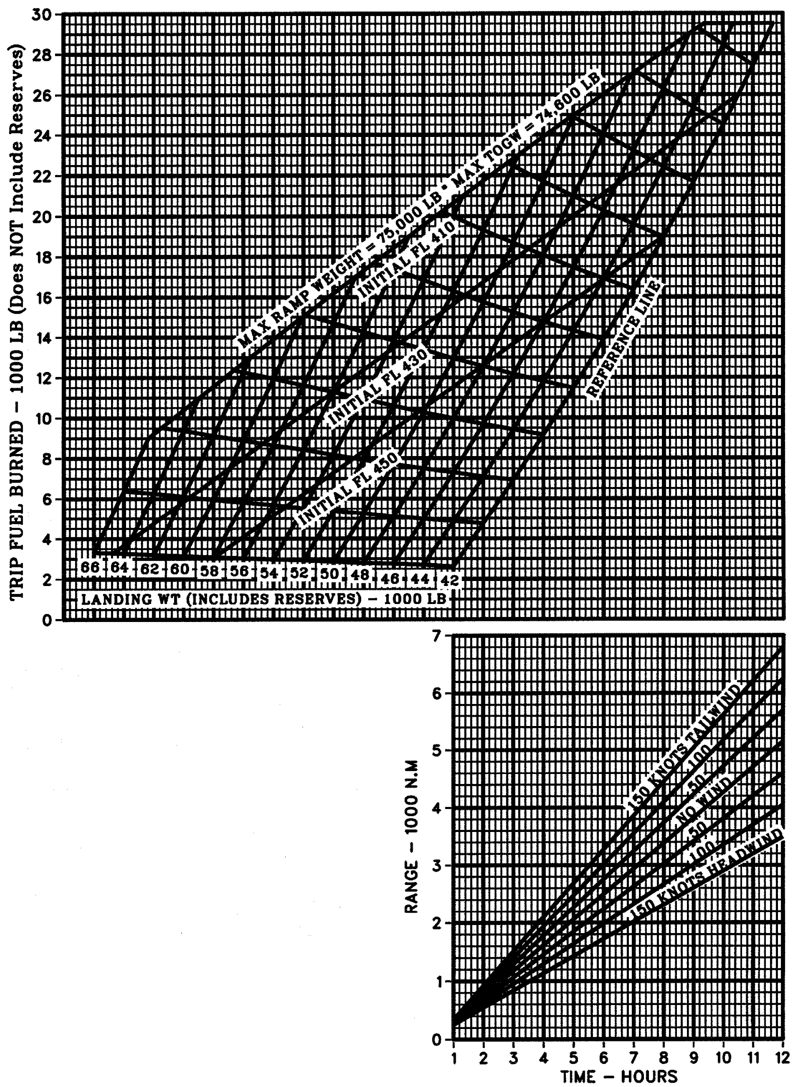
NOTE: See the **GIV Operating Manual** or **GIV Cruise Control Manual** for procedures to account for temperature deviation from ISA day and/or wind conditions.

GIV-SP Twin Engine Flight Planning: Mach 0.77 - ISA

CCM

For airplanes SN 1214 and subsequent and SN 1000 thru 1213 with ASC 190 incorporated.

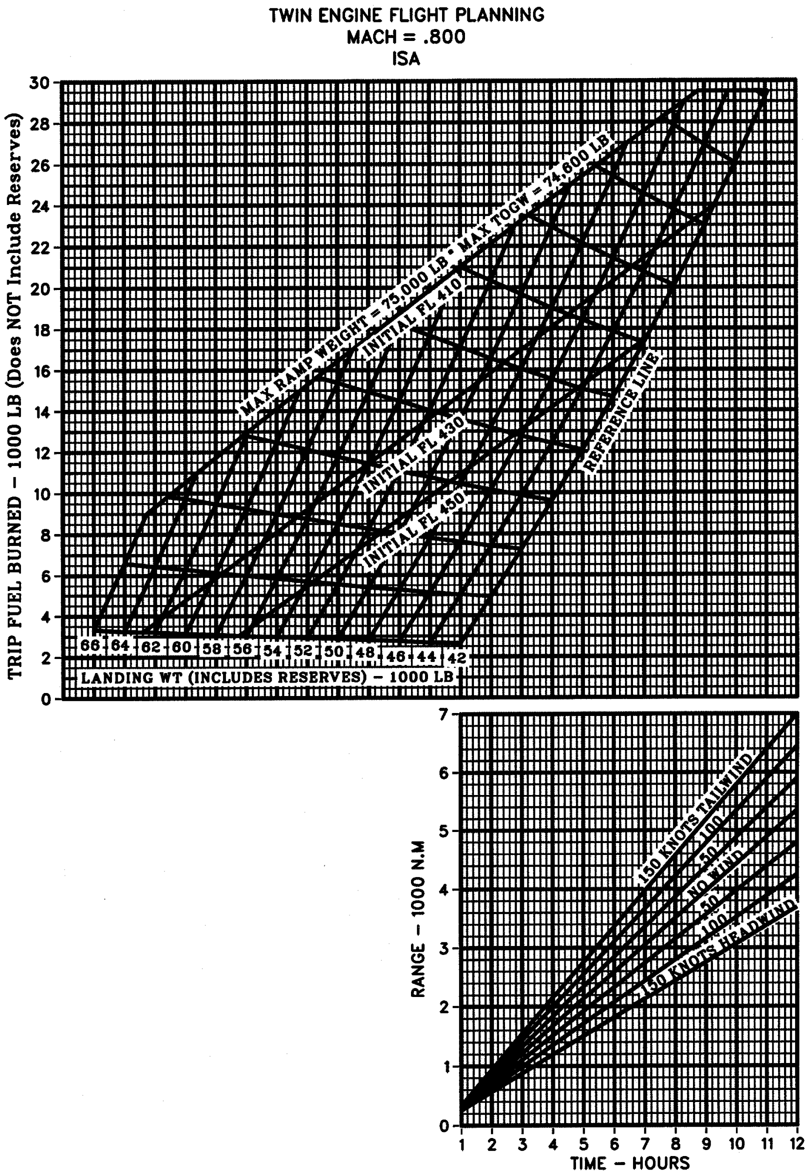
TWIN ENGINE FLIGHT PLANNING
MACH = .770
ISA



GIV-SP Twin Engine Flight Planning: Mach 0.80 - ISA

CCM

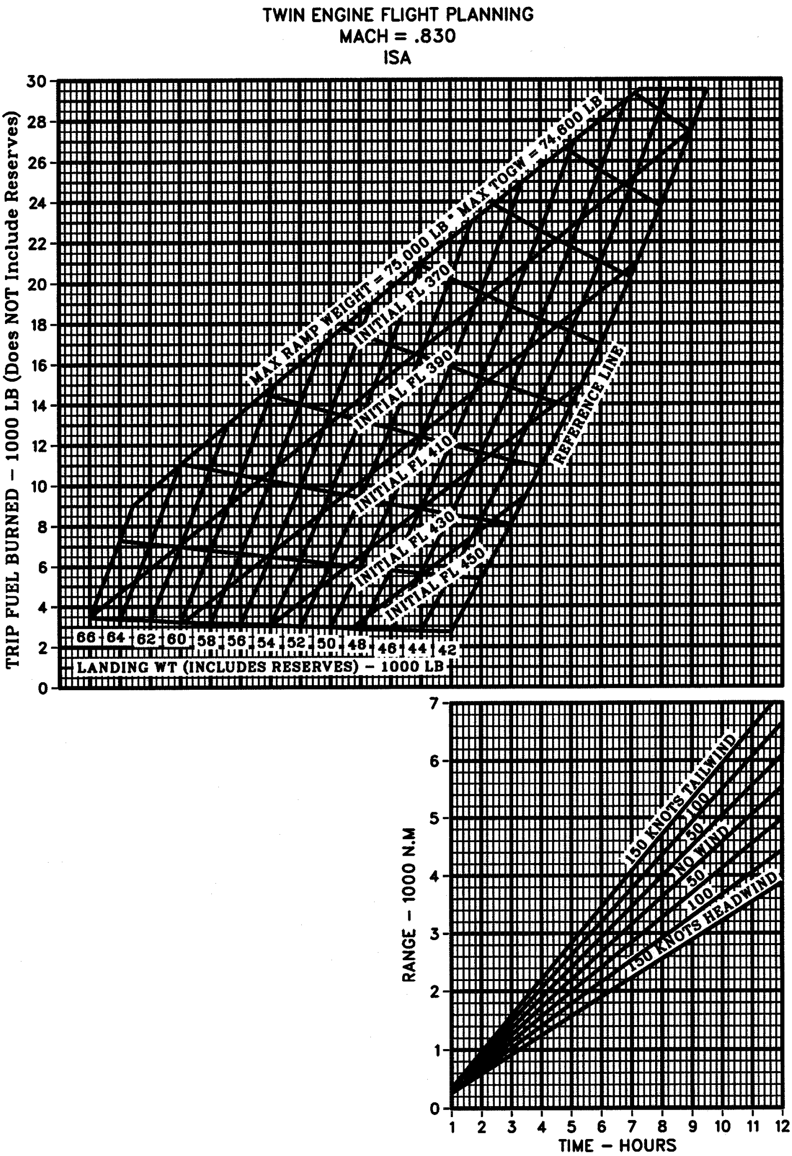
For airplanes SN 1214 and subsequent and SN 1000 thru 1213 with ASC 190 incorporated.



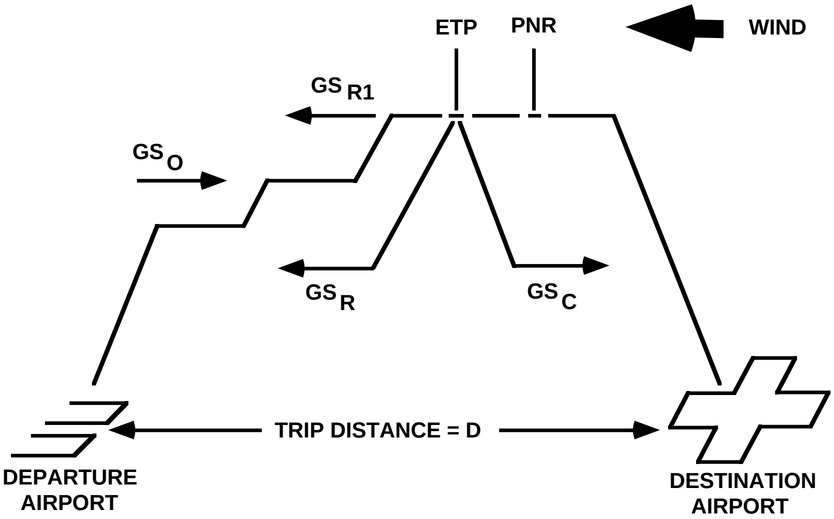
GIV-SP Twin Engine Flight Planning: Mach 0.83 - ISA

CCM

For airplanes SN 1214 and subsequent and SN 1000 thru 1213 with ASC 190 incorporated.



GIV-SP Equal Time Point And Point Of No Return CCM



The following formula is used to calculate the ground distance from the departure airport to ETP:

$$\text{GROUND DISTANCE TO ETP} = \frac{(D)\ (GS_R)}{GS_C + GS_R} = \text{NM}$$

Where:

D = Total Trip Distance

GS_C = Ground Speed To Continue To Destination At Altitude To Be Flown

GS_R = Ground Speed To Departure Airport At Altitude To Be Flown

The following formula is used to calculate the ground distance from the departure airport to PNR:

$$\text{GROUND DISTANCE TO PNR} = \frac{(\text{Endurance})\ (GS_{R1})\ (GS_O)}{GS_O + GS_{R1}} = \text{NM}$$

Where:

$$\text{Endurance} = \frac{\text{Total Fuel Quantity}}{\text{Average Fuel Flow}}$$

GS_O = Normal Outbound Ground Speed At Cruise Altitude

GS_{R1} = Return Ground Speed At Normal Cruise Altitude

GIV-SP Twin Engine Alternate Airport Flight Plan Fuel

CCM

For airplanes SN 1214 and subsequent and SN 1000 thru 1213 with ASC 190 incorporated.

Conditions:

- Standard Day, No Wind
- Zero-Fuel Gross Weight of 44,100 Lb
- 1500 Lb Reserve Fuel Included
- Five (5) Minute Approach Fuel Allowance Included

Distance To Alternate (NM)	Flight Level	Enroute Time (Hr:Min)	TAS (Knots)	True Mach Number	CAS (Knots)	Fuel Quantity (Pounds)
100	230	0:24	329	.542	233	2770
120	250	0:27	338	.562	232	2920
140	310	0:29	378	.645	235	3050
160	350	0:32	412	.715	240	3170
180	370	0:33	427	.745	240	3280
200	410	0:36	437	.762	224	3380
220	430	0:39	442	.770	216	3480
240	450	0:42	442	.770	206	3580
260	450	0:44	442	.770	206	3680
280	450	0:47	442	.770	206	3780
300	450	0:50	442	.770	206	3880
320	450	0:53	442	.770	206	3990
340	450	0:56	442	.770	206	4090
360	450	0:59	442	.770	206	4190
380	450	1:01	442	.770	206	4270
400	450	1:03	442	.770	206	4370
420	450	1:06	442	.770	206	4490
440	450	1:09	442	.770	206	4590
460	450	1:12	442	.770	206	4670
480	450	1:15	442	.770	206	4790
500	450	1:18	442	.770	206	4890
520	450	1:20	442	.770	206	4970
540	450	1:23	442	.770	206	5090
560	450	1:26	442	.770	206	5200
580	450	1:29	442	.770	206	5290
600	450	1:31	442	.770	206	5380

GIV-SP Landing Field Length: Anti-Skid System Operative - Flaps 39°

AFM 5.11

For airplanes SN 1214 and subsequent and SN 1000 thru 1213 with ASC 190 incorporated.

CAUTION: THE GIV-SP MAXIMUM LANDING WEIGHT IS 66,000 POUNDS.

NOTES:

1. ISA day, normal landing configuration.
2. For intended destination wet, multiply landing field lengths below by 1.15.
3. For unfactored landing distances, multiply field lengths below by 0.60.
4. Field lengths seen below are based on no wind or runway slope, but may be conservatively used with headwinds or uphill runway slopes.
5. For all abnormal landing configurations, see **Abnormal Landing Field Length Table**, page PC-16.

Landing Gross Weight (Lb)	Intended Destination Dry Landing Field Length (Feet) For Airport Pressure Altitudes As Shown					
	Sea Level	2000 Feet	4000 Feet	6000 Feet	8000 Feet	10000 Feet
45000	4340	4470	4600	4760	4950	5260
50000	4570	4710	4860	5040	5260	5600
55000	4800	4950	5120	5310	5550	5930
60000	5030	5200	5380	5600	5860	6270
65000	5260	5440	5640	5880	6160	6610
70000	5500	5690	5910	6160	6480	6940
75000	5730	5940	6170	6440	6770	7270

GIV-SP Landing Speed Schedule

AFM 5.11

For airplanes SN 1214 and subsequent and SN 1000 thru 1213 with ASC 190 incorporated.

The following guidance is provided to assist in the use of the charts in this section:

Tire speed limits occur when touchdown speeds exceeds 195.5 knots (225 MPH). **Tire fuseplug release limits** occur when Brake Kinetic Energy (BKE) for a maximum effort landing (full brake application at touchdown) exceeds 57 MFP, making fuseplug release possible. If brake application is delayed following touchdown, the resulting lower level of BKEs can be determined from **GIV Airplane Flight Manual Appendix C, GIV-SP Brake Kinetic Energy and Carbon Brake Cooling**.

Limits shown in the charts that follow are conservative in nature and represent a combination of worst-case conditions, i.e., maximum temperature at a given altitude plus a 2% downhill runway slope. These limits apply to a nil or headwind condition only.

NOTE: All speeds shown are KCAS.

Weight = 45000 LB			Normal Flaps 39°		Abnormal Flaps 20°		Abnormal Flaps 10°		Abnormal Flaps UP	
Altitude	F39° Shake	F39° Push	V_{APP}	V_{REF}	V_{APP}	V_{REF}	V_{APP}	V_{REF}	V_{APP}	V_{REF}
0	101	95	133	123	136	126	141	131	149	139
2000	101	95	133	123	136	126	142	132	149	139
4000	101	95	133	123	137	127	143	133	151	141
6000	102	95	134	124	138	128	144	134	152	142
8000	103	96	135	125	139	129	146	136	**154**	**144**
10000	104	97	136	126	141	131	**147**	**137**	**156**	**146**
12000	105	98	137	127	**142**	**132**	**149**	**139**	**158**	**148**
14000	106	99	**139**	**129**	**143**	**133**	**150**	**140**	**160**	**150**
15000	107	100	**139**	**129**	**144**	**134**	**151**	**141**	**161**	**151**

CAUTION: Fuseplug Release Possible With Max. Braking (hatched cells)

CAUTION: Tire Speed Limit (gray cells)

GIV-SP Landing Speed Schedule, ctd… AFM 5.11

NOTES:

1. See the explanatory text presented on page PC-2 of this section.
2. All speeds shown are KCAS.

Weight = 50000 LB			Normal Flaps 39°		Abnormal Flaps 20°		Abnormal Flaps 10°		Abnormal Flaps UP	
Altitude	F39° Shake	F39° Push	V_{APP}	V_{REF}	V_{APP}	V_{REF}	V_{APP}	V_{REF}	V_{APP}	V_{REF}
0	107	100	140	130	143	133	149	139	157	147
2000	107	100	140	130	143	133	149	139	157	147
4000	107	100	140	130	144	134	150	140	158	148
6000	107	100	140	130	145	135	151	141	160	150
8000	108	101	142	132	147	137	153	143	162	152
10000	109	102	143	133	148	138	155	145	164	154
12000	111	103	144	134	149	139	156	146	166	156
14000	112	104	146	136	151	141	158	148	168	158
15000	112	105	146	136	152	142	159	149	170	160

CAUTION: Fuseplug Release Possible With Max. Braking | ***CAUTION: Tire Speed Limit***

Weight = 55000 LB			Normal Flaps 39°		Abnormal Flaps 20°		Abnormal Flaps 10°		Abnormal Flaps UP	
Altitude	F39° Shake	F39° Push	V_{APP}	V_{REF}	V_{APP}	V_{REF}	V_{APP}	V_{REF}	V_{APP}	V_{REF}
0	112	105	146	136	149	139	155	145	164	154
2000	112	105	146	136	149	139	155	145	164	154
4000	112	105	146	136	150	140	157	147	166	156
6000	113	105	147	137	152	142	158	148	168	158
8000	114	106	148	138	153	143	160	150	170	160
10000	115	107	149	139	154	144	162	152	172	162
12000	116	108	151	141	156	146	163	153	174	164
14000	117	110	152	142	158	148	165	155	176	166
15000	118	110	153	143	158	148	166	156	177	167

CAUTION: Fuseplug Release Possible With Max. Braking | ***CAUTION: Tire Speed Limit***

GIV-SP Landing Speed Schedule, ctd… AFM 5.11

NOTES:

1. See the explanatory text presented on page PC-2 of this section.
2. All speeds shown are KCAS.

Weight = 60000 LB			Normal Flaps 39°		Abnormal Flaps 20°		Abnormal Flaps 10°		Abnormal Flaps UP	
Altitude	F39° Shake	F39° Push	V_{APP}	V_{REF}	V_{APP}	V_{REF}	V_{APP}	V_{REF}	V_{APP}	V_{REF}
0	117	109	152	142	156	146	162	152	171	161
2000	117	109	152	142	156	146	162	152	171	161
4000	117	109	152	142	157	147	163	153	173	163
6000	118	110	153	143	158	148	165	155	175	165
8000	119	111	154	144	160	150	167	157	177	167
10000	120	112	156	146	161	151	168	158	179	169
12000	121	113	157	147	163	153	170	160	181	171
14000	123	114	159	149	164	154	172	162	184	174
15000	123	115	160	150	165	155	173	163	185	175

***CAUTION:** Fuseplug Release Possible With Max. Braking*

***CAUTION:** Tire Speed Limit*

Weight = 65000 LB			Normal Flaps 39°		Abnormal Flaps 20°		Abnormal Flaps 10°		Abnormal Flaps UP	
Altitude	F39° Shake	F39° Push	V_{APP}	V_{REF}	V_{APP}	V_{REF}	V_{APP}	V_{REF}	V_{APP}	V_{REF}
0	122	114	158	148	162	152	168	158	178	168
2000	122	114	158	148	162	152	168	158	178	168
4000	122	114	158	148	163	153	169	159	179	169
6000	122	114	159	149	164	154	171	161	181	171
8000	124	116	160	150	166	156	173	163	184	174
10000	125	117	162	152	167	157	175	165	186	176
12000	126	118	163	153	169	159	177	167	188	178
14000	128	119	165	155	170	160	179	169	191	181
15000	128	120	166	156	171	161	180	170	192	182

***CAUTION:** Fuseplug Release Possible With Max. Braking*

***CAUTION:** Tire Speed Limit*

GIV-SP Landing Speed Schedule, ctd… AFM 5.11

NOTES:

1. See the explanatory text presented on page PC-2 of this section.
2. All speeds shown are KCAS.

Weight = 70000 LB			Normal Flaps 39°		Abnormal Flaps 20°		Abnormal Flaps 10°		Abnormal Flaps UP	
Altitude	F39° Shake	F39° Push	V_{APP}	V_{REF}	V_{APP}	V_{REF}	V_{APP}	V_{REF}	V_{APP}	V_{REF}
0	126	118	164	154	167	157	174	164	184	174
2000	126	118	164	154	167	157	174	164	184	174
4000	126	118	164	154	169	159	176	166	186	176
6000	127	119	164	154	170	160	177	167	188	178
8000	128	120	166	156	172	162	179	169	190	180
10000	130	121	167	157	173	163	181	171	193	183
12000	131	122	169	159	175	165	183	173	195	185
14000	132	124	171	161	177	167	185	175	198	188
15000	133	124	172	162	178	168	187	177	199	189

CAUTION: Fuseplug Release Possible With Max. Braking (hatched shading)

CAUTION: Tire Speed Limit (grey shading)

Weight = 75000 LB			Normal Flaps 39°		Abnormal Flaps 20°		Abnormal Flaps 10°		Abnormal Flaps UP	
Altitude	F39° Shake	F39° Push	V_{APP}	V_{REF}	V_{APP}	V_{REF}	V_{APP}	V_{REF}	V_{APP}	V_{REF}
0	131	122	169	159	173	163	180	170	190	180
2000	131	122	169	159	173	163	180	170	190	180
4000	131	122	169	159	174	164	181	171	192	182
6000	132	123	170	160	176	166	183	173	194	184
8000	133	124	171	161	177	167	185	175	197	187
10000	134	125	173	163	179	169	187	177	199	189
12000	136	127	175	165	181	171	190	180	202	192
14000	137	128	176	166	183	173	192	182	204	194
15000	138	129	177	167	183	173	193	183	206	196

CAUTION: Fuseplug Release Possible With Max. Braking (hatched shading)

CAUTION: Tire Speed Limit (grey shading)

GIV-SP Landing Distance Using Twin-Engine Reverse Thrust Only (No Braking)

OM 07-01-80

For airplanes SN 1214 and subsequent and SN 1000 thru 1213 with ASC 190 incorporated.

The table on the following page shows landing distances when using reverse thrust only to bring the aircraft to a stop. The distances shown below assume reverse thrust is used to 20 knots with stowage by 10 knots.

Conditions:

- Two-Engine Reverse Thrust Only
- No Slope
- No Wind
- Standard Day Temperature
- AUTO Ground Spoilers
- No Runway Surface Contamination Accumulation
- Full Reverse Thrust To 20 Knots
- Stowage By 10 Knots
- Minimal Braking Below 10 Knots
- Flaps 39°

NOTE: **Airplane Flight Manual** procedures recommend that cancellation of thrust reversers be initiated by 70 knots, so as to be completely cancelled by the time normal taxi speed is achieved. If landing runway conditions will result in compromised braking performance, this table may be used to provide additional information for pilot judgment.

GIV-SP Landing Distance Using Twin-Engine Reverse Thrust Only (No Braking), ctd… OM 07-01-90

ALT (Ft)	Landing Distance (Feet) Gross Weight (lb)					
	74,600	73,200	70,000	66,000	65,000	60,000
15,000	15,166	14,850	14,122	13,209	12,985	11,890
14,000	14,346	14,045	13,359	12,501	12,287	11,264
12,000	12,837	12,569	11,960	11,204	11,019	10,112
10,000	11,495	11,255	10,719	10,052	9,886	9,082
8,000	10,524	10,309	9,823	9,215	9,068	8,342
6,000	9,847	9,649	9,199	8,639	8,500	7,831
4,000	9,265	9,081	8,665	8,144	8,015	7,395
2,000	8,771	8,601	8,213	7,727	7,608	7,028
0	8,320	8,161	7,795	7,343	7,230	6,692

ALT (Ft)	Landing Distance (Feet) Gross Weight (lb)					
	58,500	55,000	50,000	45,000	40,000	
15,000	11,564	10,813	9,787	8,776	7,827	
14,000	10,952	10,250	9,282	8,330	7,440	
12,000	9,837	9,212	8,359	7,516	6,732	
10,000	8,841	8,289	7,532	6,788	6,093	
8,000	8,122	7,623	6,940	6,270	5,648	
6,000	7,630	7,169	6,541	5,925	5,358	
4,000	7,207	6,784	6,204	5,638	5,116	
2,000	6,855	6,458	5,920	5,398	4,921	
0	6,530	6,160	5,657	5,178	4,744	

GIV-SP Aircraft Classification Number (ACN) GIV-GER-481

Aircraft Classification Number (ACN) is a number expressing the relative effect of an aircraft on a pavement for a specified subgrade category. ACN values are calculated for both flexible and rigid pavement. If the aircraft gross weight and runway subgrade strength are known, the ACN value can be determined from the charts on the following pages.

Pavement Classification Number (PCN) is a number expressing the bearing strength of a pavement for unrestricted operations. It is reported in the Jeppesen charts in a format such as **24/F/C/Y/T**, where:

24 is the PCN

F is the type of pavement, where:
- **R** = Rigid
- **F** = Flexible

C is the subgrade strength, where:
- **D** = Ultra Low
- **C** = Low
- **B** = Medium
- **A** = High

Y is the tire pressure, where:
- **W** = High, no pressure limit
- **X** = Medium, limited to 217 psi
- **Y** = Low, limited to 145 psi
- **Z** = Very Low, limited to 73 psi

T is the PCN classification, where:
- **T** = Technical Evaluation
- **U** = Aircraft Experience

ACN values must be less than or equal to the airport PCN for unrestricted use. ACN input variables are gross weight, percent load on main wheels, wheel spacing and maximum tire pressure.

Example 1:

Given: Gross Weight = 70,000 lb, PCN = 24/F/C/Y/T

Where:
PCN = 24
F = Flexible Pavement
ACN = 22 (from charts)
C = Low Subgrade Strength
Y = 145 psi Tire Pressure Limit
T = Technical Evaluation

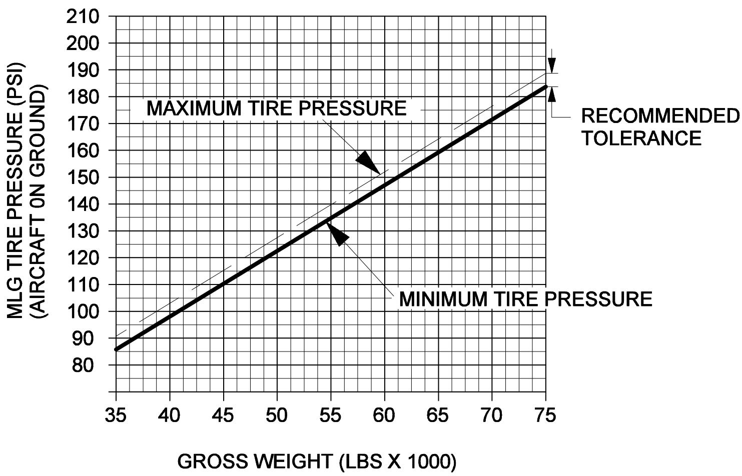
Thus: ACN less than PCN, but tire pressure becomes a restriction.

Example 2:

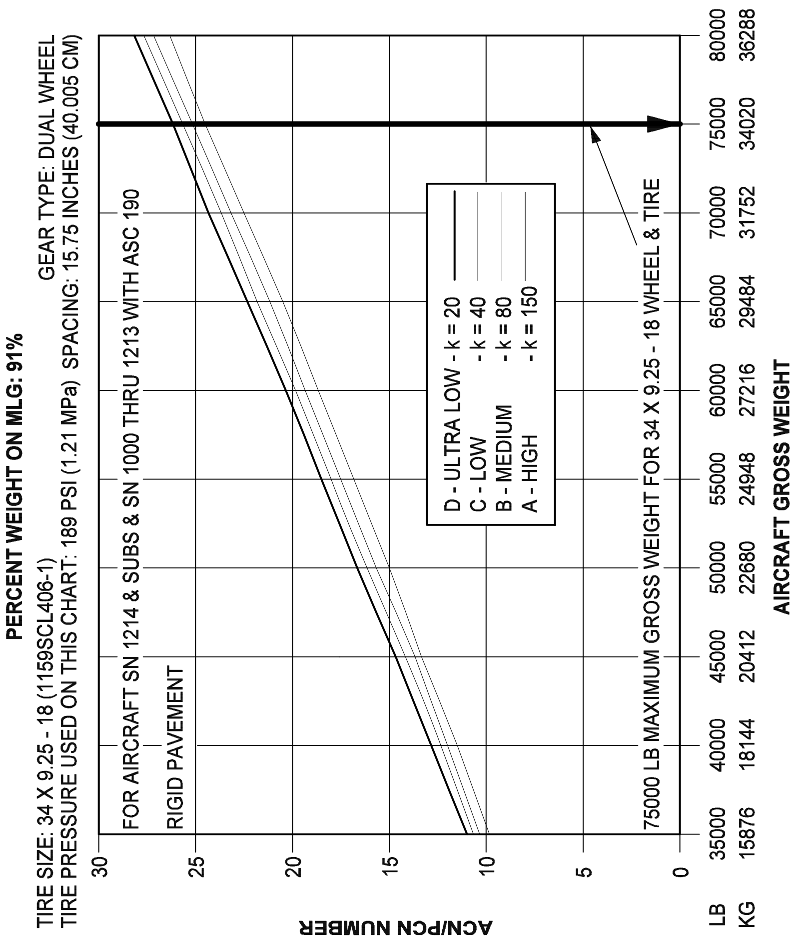
Given: Gross Weight = 70,000 lb, PCN = 80/R/B/W/T

Where:
PCN = 80
R = Rigid Pavement
ACN = 22 (from charts)
B = Medium Subgrade Strength
W = No Tire Pressure Limit
T = Technical Evaluation

Thus: ACN less than PCN, no tire pressure limit. Suitable runway.

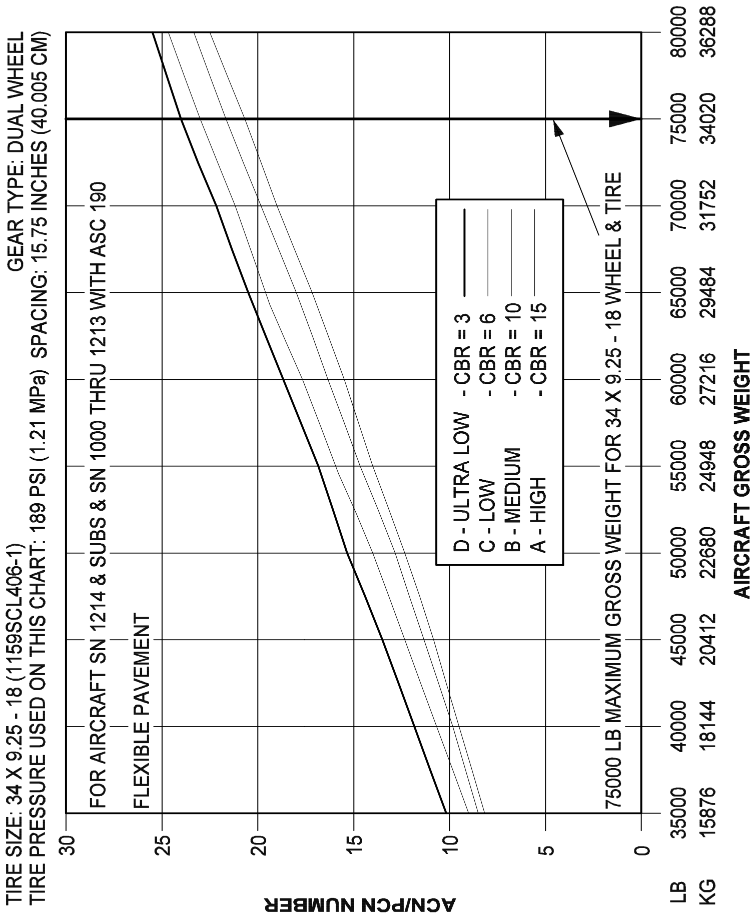


Main Landing Gear Tire Pressure vs. Gross Weight: 1159SCL406-1 Tires



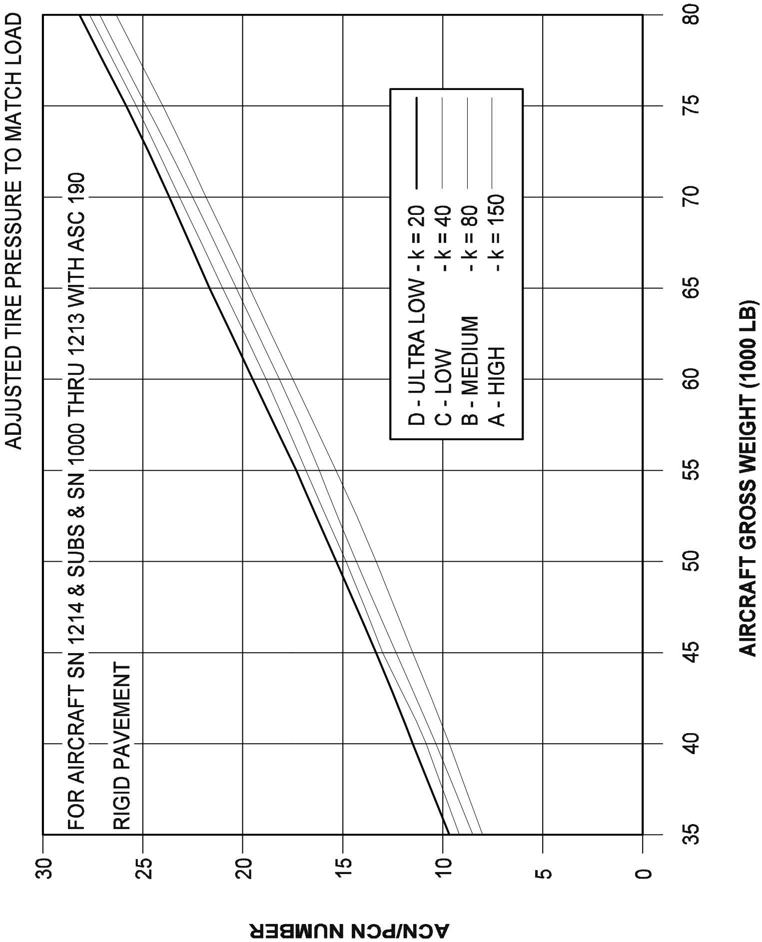
26586C02

NOTE: Use of these charts is to be with reference to **GIV Operating Manual Chapter 6: Approach and Landing Characteristics and Procedures**.



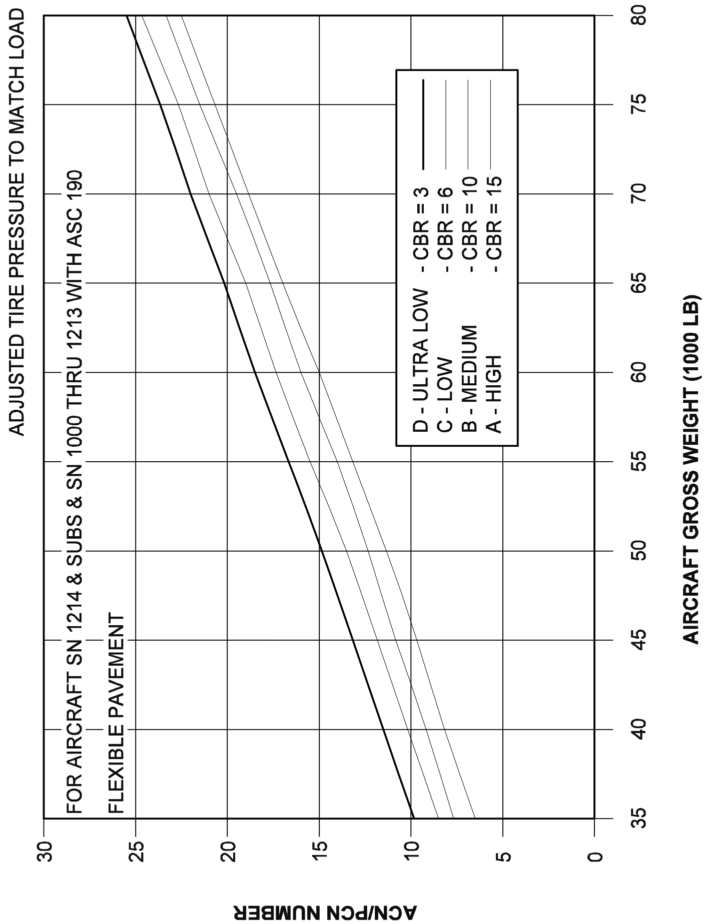
26587C02

NOTE: Use of these charts is to be with reference to **GIV Operating Manual Chapter 6: Approach and Landing Characteristics and Procedures**.



26590C02

NOTE: Use of these charts is to be with reference to **GIV Operating Manual Chapter 6: Approach and Landing Characteristics and Procedures**.



26591C01

NOTE: Use of these charts is to be with reference to **GIV Operating Manual Chapter 6: Approach and Landing Characteristics and Procedures**.

GIV-SP Equivalent Single Wheel Loading (ESWL)

OM 06-05-90

Introduction:

One consideration in operating Gulfstream aircraft is the strength of runway and taxiway pavements in relation to aircraft operating weight. This can limit operational weights in some airports. One common method of evaluating an aircraft for a given runway is the Equivalent Single Wheel Loading (ESWL). ESWL accounts for the extra tire flotation for multi-wheel landing gear struts such as the dual wheel struts used on the Gulfstream aircraft. This section provides information on how to compute ESWL for the G400, G300, GIV-SP and Non-SP GIV airplanes.

G400, G300, GIV-SP and Non-SP GIV Main Landing Gear Parameters:

Max Ramp Weight	MLG Tire Size	Tire Spacing	Max Tire Pressure	Reduction Factor	Maximum ESWL
(pounds)	(inches)	(inches)	(psi)	----	(pounds)
75,000	34 × 9.5	16.0	190	1.23	27,439

The reduction factor in the table above assumes a rigid pavement with a radius of equivalent stiffness of 40 inches, roughly equivalent to a 13.5 inch thick concrete slab. Thinner pavements would give higher reduction factors, so the factors presented are conservative.

ESWL Computation for Lower Operating Weights:

ESWL can be computed for lower operating weights as follows:

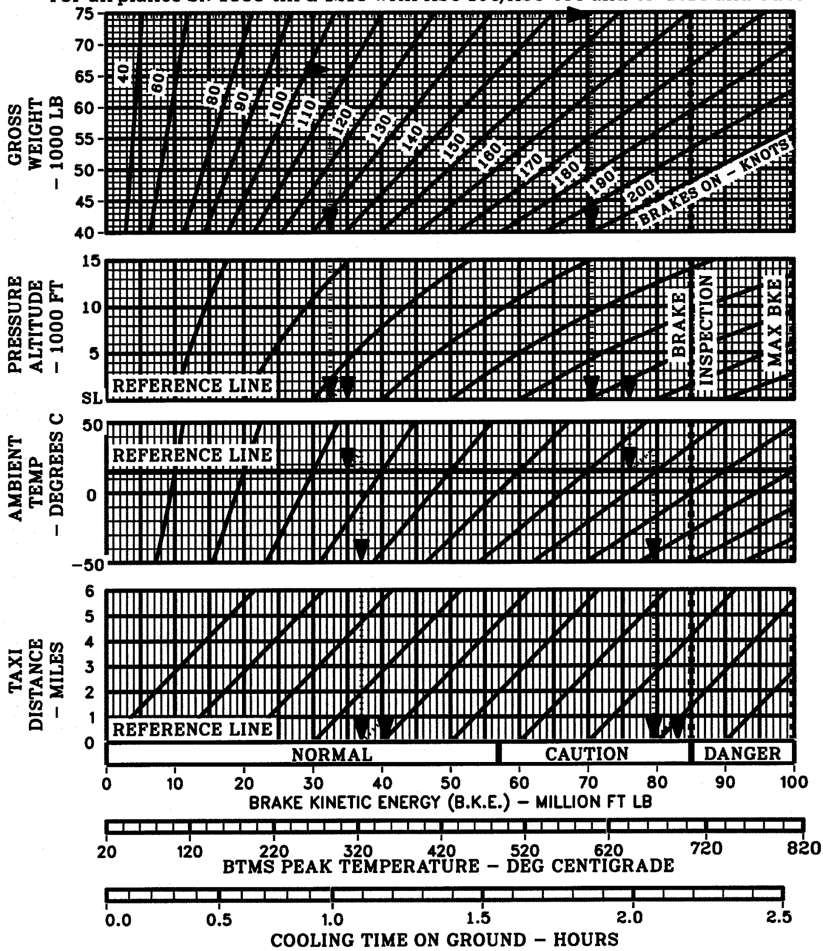
ESWL = (Gross Weight) × (0.9) × (0.5) ÷ (Reduction Factor)

GIV-SP Brake Kinetic Energy / Carbon Brake Cooling

AFM APP. C

BRAKE KINETIC ENERGY (BKE) AND CARBON BRAKE COOLING REQUIREMENTS

For airplanes SN 1000 thru 1213 with ASC 190/ASC 266 and SN 1214 and Subs.



NOTE: Use of these charts is to be with reference to **GIV Airplane Flight Manual Appendix C: Brake Kinetic Energy and Carbon Brake Cooling**.

GIV-SP Abnormal Landing Field Length Table GAC

GIV-SP Abnormal Landing Field Length Table						
Reference Landing Field Length (Feet)		Corrected, Factored (x 1.67), Dry Runway Landing Field Length (Feet) For Abnormal Landing Configuration				
39°	**Flaps**	39°	39°	20°	10°	0°
OPERATIVE	**Anti-Skid**	OPERATIVE	INOP	OPERATIVE	OPERATIVE	OPERATIVE
AUTO	**Speedbrakes**	MANUAL	AUTO	AUTO	AUTO	AUTO
4200		4620	8660	4320	4510	4700
4400		4860	9190	4530	4740	4950
4600		5090	9720	4740	4970	5210
4800		5330	10250	4950	5200	5460
5000		5570	10790	5160	5430	5710
5200		5810	11320	5370	5660	5970
5400		6050	11850	5580	5890	6220
5600		6290	12380	5790	6120	6480
5800		6530	12910	6000	6350	6730
6000		6770	13440	6210	6580	6980
6200		7000	13970	6420	6810	7240
6400		7240	14510	6630	7040	7490
6600		7480	15040	6840	7270	7750
6800		7720	15570	7050	7510	8000
7000		7960	16100	7260	7740	8260
7200		8200	16630	7470	7970	8510
7400		8440	17160	7680	8200	8760

CAUTION: THE GIV-SP MAXIMUM LANDING WEIGHT IS 66,000 LB (29,937 KG).

NOTES:

1. Reference Landing Field Length in first column is a FAR 135 factored, ISA-Day, dry runway distance for a normal landing configuration (Flaps 39°, Anti-Skid operative and Automatic deployment of speed brakes / ground-spoilers).
2. For intended destination wet, multiply landing field lengths above by 1.15.
3. For unfactored landing distances, multiply field lengths above by 0.60.
4. Field lengths seen above are based on no wind or runway slope, but may be conservatively used with headwinds or uphill runway slopes.
5. For all abnormal landing flap configurations (0°, 10°, and 20°) with manual speed brake deployment, increase the flaps 0° landing distance (based on auto ground spoiler deployment) by 10%.

Non-SP GIV Performance Planning Index

Non-SP GIV Takeoff Planning

Continued on next page →

Non-SP GIV Performance Planning Index, ctd…

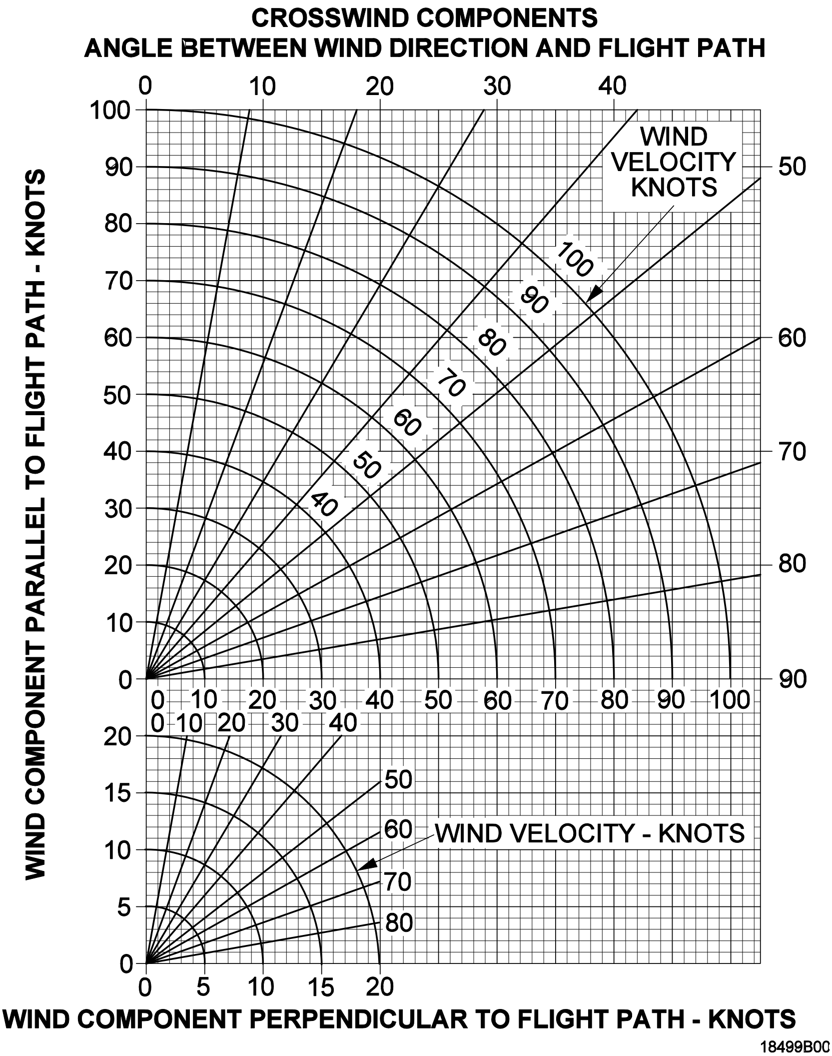
Non-SP GIV Cruise Planning

Non-SP GIV Cruise Planning, ctd..

Non-SP GIV Landing Planning

Non-SP GIV Crosswind Components

AFM 5.1



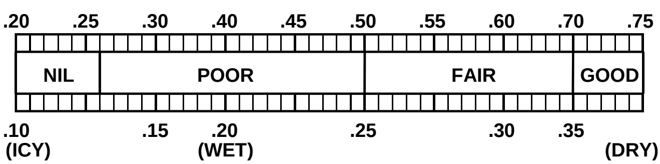
Non-SP GIV Contaminated Runway Operations

GIV-OIS-2A

RUNWAY SURFACE CONTAMINATION (RSC), CRFI EQUIVALENT AND ESTIMATED LANDING BRAKING COEFFICIENT

RSC	CRFI EQUIVALENT	PIREP	RCR	APPROXIMATE BRAKING COEFFICIENT
Bare and Dry	≥ 0.80			
Damp - Less than 0.01 inch of water	0.60 - 0.70	Good	≥ 18	0.36 - 0.39
Very light snow patches	0.55 - 0.60			
Wet concrete - 0.01 to 0.03 inch of water	0.40 - 0.55			
Wet Asphalt - 0.01 to 0.03 inch of water	0.30 - 0.60	Fair	13 - 18	0.25 - 0.35
Compacted snow -- below -15°C	0.40			
Sanded, packed snow or ice	0.40 - 0.50			
Heavy rain -- 0.03 to 0.10 inch of water	0.28 - 0.30			
Snow covered	0.25 - 0.30	Poor	5 - 12	0.13 - 0.25
Compacted snow -- above -15°C	0.20 - 0.25			
Cold ice -- below -10°C	0.10 - 0.20			
Wet ice -- above -10°C	0.05 - 0.10			
Hydroplaning - standing water ≥ 0.10	0.05	Nil	≤ 5	≤ 0.13

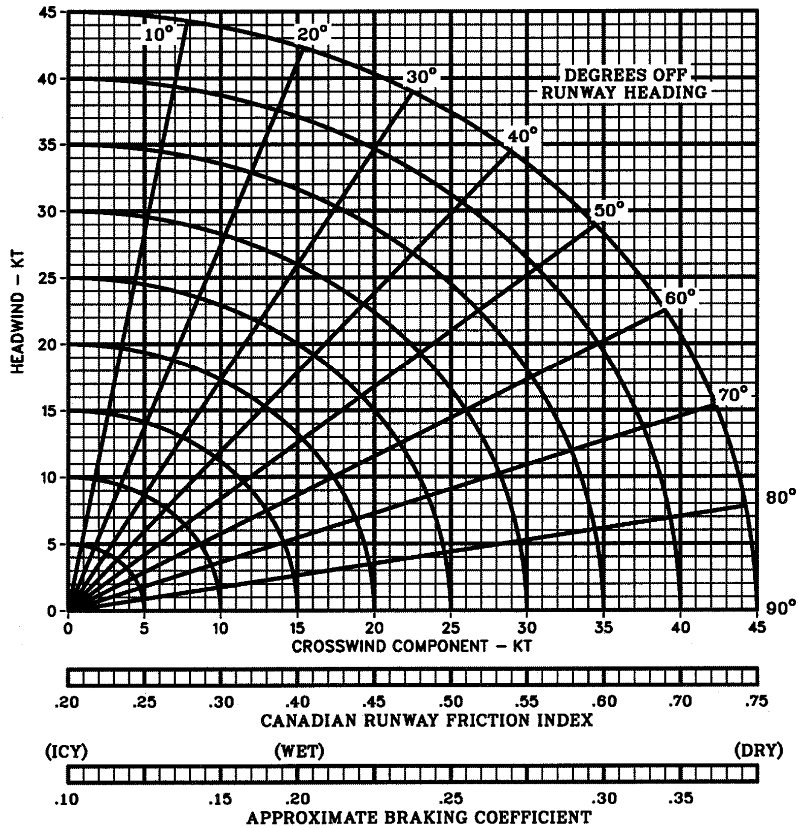
CANADIAN RUNWAY FRICTION INDEX



APPROXIMATE BRAKING COEFFICIENT

NOTE: The data presented above is advisory data only and is not FAA approved. For additional information concerning contaminated runway operations, refer to the latest approved revision of **Operational Information Supplement GIV-OIS-2A, Contaminated Runway Operations**.

CROSSWIND LIMITS BASED ON
CANADIAN RUNWAY FRICTION INDEX OR BRAKING COEFFICIENT
(FOR HEADWIND CONDITIONS ONLY)



NOTE: The data presented above is advisory data only and is not FAA approved. For additional information concerning contaminated runway operations, refer to the latest approved revision of **Operational Information Supplement GIV-OIS-2A, Contaminated Runway Operations**.

Non-SP GIV Takeoff Planning Charts: Flaps 20°

AFM APP. A

The charts in this section provide quick reference planning data for takeoff planning at the following Airport Pressure Altitudes (APA), for 20° flap configurations:

• Sea Level	• 500 Feet	• 1000 Feet	• 2000 Feet
• 4000 Feet	• 6000 Feet	• 8000 Feet	

In the interest of safety, the ***CAUTION*** and ***NOTES*** following each takeoff planning chart must be observed when using any takeoff planning chart in this section.

Non-SP GIV Takeoff Planning: Flaps 20° - APA Sea Level

AFM APP. A

TAKEOFF PLANNING CHART

NON-SP GIV **AIRPORT PRESSURE ALTITUDE = SEA LEVEL** **TAKEOFF FLAP 20°**

73,200 LB MTOGW	OAT (°C)	50	45	40	35	30	25	20	15	5	-5	-15
	OAT (°F)	122	113	104	95	86	77	68	59	41	23	5
	RATED EPR	1.59	1.62	1.64	1.67	1.70	1.70	1.70	1.70	1.69	1.69	1.69
-- 73,200 LB --												
V_{FS} = 171 KCAS	FLD LNGTH	7,410	6,810	6,320	5,900	5,540	5,450	5,370	5,280	5,150	4,980	4,810
V_{SE} = 178 KCAS	V_1 KCAS	144	142	140	139	137	137	137	137	138	138	138
V_{REF} = 157 KCAS	V_R KCAS	144	144	144	144	143	143	143	143	143	143	143
MAX TEMP = 50°C	V_2 KCAS	148	148	148	148	148	148	148	148	148	148	148
-- 72,000 LB --												
V_{FS} = 170 KCAS	FLD LNGTH	7,130	6,570	6,110	5,700	5,360	5,280	5,190	5,110	4,990	4,820	4,650
V_{SE} = 177 KCAS	V_1 KCAS	142	140	139	137	136	136	136	136	136	136	136
V_{REF} = 156 KCAS	V_R KCAS	143	143	143	143	142	142	142	142	142	142	142
MAX TEMP = 50°C	V_2 KCAS	147	147	147	147	147	147	147	147	147	147	147
-- 70,000 LB --												
V_{FS} = 167 KCAS	FLD LNGTH	6,690	6,190	5,760	5,390	5,070	4,990	4,910	4,840	4,720	4,560	4,400
V_{SE} = 174 KCAS	V_1 KCAS	139	137	136	134	133	133	133	133	134	134	134
V_{REF} = 154 KCAS	V_R KCAS	141	141	141	140	140	140	140	140	140	140	140
MAX TEMP = 50°C	V_2 KCAS	145	145	145	145	145	145	145	145	145	145	145
-- 68,000 LB --												
V_{FS} = 165 KCAS	FLD LNGTH	6,280	5,820	5,430	5,090	4,790	4,710	4,640	4,570	4,460	4,310	4,160
V_{SE} = 171 KCAS	V_1 KCAS	136	134	133	132	130	130	130	130	131	131	131
V_{REF} = 151 KCAS	V_R KCAS	139	139	139	138	137	137	137	137	137	137	137
MAX TEMP = 50°C	V_2 KCAS	143	143	143	143	143	143	143	143	143	143	143
-- 66,000 LB --												
V_{FS} = 162 KCAS	FLD LNGTH	5,890	5,470	5,120	4,800	4,520	4,450	4,380	4,310	4,200	4,060	3,920
V_{SE} = 169 KCAS	V_1 KCAS	133	132	130	129	128	128	128	128	128	128	128
V_{REF} = 149 KCAS	V_R KCAS	137	137	136	135	135	135	135	135	135	135	135
MAX TEMP = 50°C	V_2 KCAS	141	141	141	141	141	141	141	141	141	141	141
-- 64,000 LB --												
V_{FS} = 160 KCAS	FLD LNGTH	5,520	5,140	4,820	4,520	4,260	4,190	4,130	4,060	3,960	3,830	3,700
V_{SE} = 166 KCAS	V_1 KCAS	131	129	128	126	125	125	125	125	125	125	125
V_{REF} = 147 KCAS	V_R KCAS	135	134	134	133	132	132	132	132	132	132	132
MAX TEMP = 50°C	V_2 KCAS	139	139	139	139	139	139	139	139	139	139	139
-- 62,000 LB --												
V_{FS} = 157 KCAS	FLD LNGTH	5,170	4,830	4,530	4,250	4,010	3,950	3,890	3,830	3,730	3,610	3,480
V_{SE} = 164 KCAS	V_1 KCAS	128	126	125	123	122	122	122	122	122	122	123
V_{REF} = 144 KCAS	V_R KCAS	132	132	131	131	130	130	130	130	130	130	130
MAX TEMP = 50°C	V_2 KCAS	137	137	137	137	137	137	137	137	137	137	137
-- 60,000 LB --												
V_{FS} = 155 KCAS	FLD LNGTH	4,850	4,530	4,250	4,000	3,770	3,710	3,660	3,600	3,510	3,390	3,280
V_{SE} = 161 KCAS	V_1 KCAS	125	123	122	120	119	119	119	119	120	120	120
V_{REF} = 142 KCAS	V_R KCAS	130	129	129	128	127	127	127	127	127	127	127
MAX TEMP = 50°C	V_2 KCAS	135	135	135	135	135	135	135	135	135	135	135

CAUTION: DO NOT REDUCE TAKEOFF EPR BY MORE THAN .15 OR BELOW A MINIMUM VALUE OF 1.56.

NOTES:

HEADWIND:	Increase available field length 2% for each 5 knots (up to 40 knots).
TAILWIND:	Not permitted using this data at this pressure altitude.
UPHILL SLOPE:	Decrease available field length 20% for each 1% (up to 2%).
DOWNHILL SLOPE:	Not permitted using this data at this pressure altitude.
GROUND SPOILERS INOP:	Decrease available field length 800 feet.

Non-SP GIV Takeoff Planning: Flaps 20° - APA Sea Level, ctd…

AFM APP. A

TAKEOFF PLANNING CHART

NON-SP GIV **AIRPORT PRESSURE ALTITUDE = SEA LEVEL** **TAKEOFF FLAP 20°**

73,200 LB MTOGW	OAT (°C)	50	45	40	35	30	25	20	15	5	-5	-15
	OAT (°F)	122	113	104	95	86	77	68	59	41	23	5
	RATED EPR	1.59	1.62	1.64	1.67	1.70	1.70	1.70	1.70	1.69	1.69	1.69
-- 58,000 LB --												
V_{FS} = 152 KCAS	FLD LNGTH	4,590	4,300	4,030	3,790	3,600	3,540	3,490	3,440	3,340	3,230	3,120
V_{SE} = 158 KCAS	V_1 KCAS	123	121	120	118	117	117	117	117	118	118	118
V_{REF} = 140 KCAS	V_R KCAS	128	128	127	126	126	126	126	126	126	126	126
MAX TEMP = 50°C	V_2 KCAS	133	133	133	133	133	133	133	133	133	133	133
-- 56,000 LB --												
V_{FS} = 150 KCAS	FLD LNGTH	4,340	4,070	3,820	3,650	3,540	3,480	3,430	3,380	3,280	3,180	3,070
V_{SE} = 156 KCAS	V_1 KCAS	121	119	118	117	118	118	118	118	118	118	118
V_{REF} = 137 KCAS	V_R KCAS	127	126	125	124	124	124	124	124	124	124	124
MAX TEMP = 50°C	V_2 KCAS	132	132	132	132	132	132	132	132	132	132	132
-- 54,000 LB --												
V_{FS} = 147 KCAS	FLD LNGTH	4,150	3,890	3,700	3,580	3,480	3,430	3,370	3,320	3,230	3,120	3,020
V_{SE} = 153 KCAS	V_1 KCAS	119	118	117	117	118	118	118	118	118	118	118
V_{REF} = 135 KCAS	V_R KCAS	125	125	124	123	123	123	123	123	123	123	123
MAX TEMP = 50°C	V_2 KCAS	131	131	131	131	131	131	131	131	131	131	131
-- 52,000 LB --												
V_{FS} = 144 KCAS	FLD LNGTH	4,010	3,760	3,630	3,520	3,420	3,370	3,320	3,270	3,170	3,070	2,970
V_{SE} = 150 KCAS	V_1 KCAS	118	117	117	118	118	118	118	118	118	118	119
V_{REF} = 132 KCAS	V_R KCAS	125	124	124	123	122	122	122	122	122	122	122
MAX TEMP = 50°C	V_2 KCAS	131	131	131	131	131	131	131	131	131	131	131
-- 50,000 LB --												
V_{FS} = 142 KCAS	FLD LNGTH	3,860	3,670	3,560	3,450	3,360	3,310	3,260	3,210	3,120	3,020	2,920
V_{SE} = 147 KCAS	V_1 KCAS	118	117	117	118	118	118	118	118	119	119	119
V_{REF} = 130 KCAS	V_R KCAS	125	124	123	122	122	122	122	122	122	122	122
MAX TEMP = 50°C	V_2 KCAS	131	131	131	131	131	131	131	131	131	131	131
-- 48,000 LB --												
V_{FS} = 139 KCAS	FLD LNGTH	3,720	3,600	3,490	3,390	3,300	3,250	3,200	3,150	3,060	2,970	2,870
V_{SE} = 144 KCAS	V_1 KCAS	117	117	118	118	119	119	119	119	119	119	119
V_{REF} = 127 KCAS	V_R KCAS	124	124	123	122	121	121	121	121	121	121	121
MAX TEMP = 50°C	V_2 KCAS	131	131	131	131	131	131	131	131	131	131	131
-- 46,000 LB --												
V_{FS} = 136 KCAS	FLD LNGTH	3,640	3,530	3,420	3,330	3,240	3,190	3,140	3,100	3,010	2,910	2,820
V_{SE} = 141 KCAS	V_1 KCAS	117	118	118	119	119	119	119	119	119	119	120
V_{REF} = 124 KCAS	V_R KCAS	124	123	122	122	121	121	121	121	121	121	121
MAX TEMP = 50°C	V_2 KCAS	131	131	131	131	131	131	131	131	131	131	131

CAUTION: DO NOT REDUCE TAKEOFF EPR BY MORE THAN .15 OR BELOW A MINIMUM VALUE OF 1.56.

NOTES:

- HEADWIND: Increase available field length 2% for each 5 knots (up to 40 knots).
- TAILWIND: Not permitted using this data at this pressure altitude.
- UPHILL SLOPE: Decrease available field length 20% for each 1% (up to 2%).
- DOWNHILL SLOPE: Not permitted using this data at this pressure altitude.
- GROUND SPOILERS INOP: Decrease available field length 800 feet.

Non-SP GIV Takeoff Planning: Flaps 20° - APA 500 Feet

AFM APP. A

TAKEOFF PLANNING CHART

NON-SP GIV **AIRPORT PRESSURE ALTITUDE = 500 FEET** **TAKEOFF FLAP 20°**

73,200 LB MTOGW	OAT (°C)	49	45	40	35	30	25	20	15	5	-5	-15
	OAT (°F)	120	113	104	95	86	77	68	59	41	23	5
	RATED EPR	1.59	1.62	1.64	1.67	1.70	1.71	1.71	1.71	1.70	1.70	1.70
-- 73,200 LB --												
V_{FS} = 171 KCAS	FLD LNGTH	7,630	7,120	6,590	6,140	5,760	5,590	5,500	5,410	5,280	5,100	4,930
V_{SE} = 178 KCAS	V_1 KCAS	144	143	141	139	138	138	138	138	138	138	138
V_{REF} = 157 KCAS	V_R KCAS	144	144	144	144	144	144	144	144	144	144	144
MAX TEMP = 49°C	V_2 KCAS	148	148	148	148	148	148	148	148	148	148	148
-- 72,000 LB --												
V_{FS} = 170 KCAS	FLD LNGTH	7,320	6,860	6,360	5,930	5,570	5,410	5,320	5,240	5,110	4,940	4,770
V_{SE} = 177 KCAS	V_1 KCAS	142	141	139	138	136	136	136	136	136	136	137
V_{REF} = 156 KCAS	V_R KCAS	143	143	143	143	142	142	142	142	142	142	142
MAX TEMP = 49°C	V_2 KCAS	147	147	147	147	147	147	147	147	147	147	147
-- 70,000 LB --												
V_{FS} = 167 KCAS	FLD LNGTH	6,870	6,450	6,000	5,610	5,270	5,120	5,030	4,950	4,830	4,670	4,510
V_{SE} = 174 KCAS	V_1 KCAS	140	138	136	135	134	133	133	133	134	134	134
V_{REF} = 154 KCAS	V_R KCAS	141	141	141	141	140	140	140	140	140	140	140
MAX TEMP = 49°C	V_2 KCAS	145	145	145	145	145	145	145	145	145	145	145
-- 68,000 LB --												
V_{FS} = 165 KCAS	FLD LNGTH	6,440	6,060	5,650	5,290	4,970	4,830	4,750	4,680	4,560	4,410	4,260
V_{SE} = 172 KCAS	V_1 KCAS	136	135	134	132	131	131	131	131	131	131	131
V_{REF} = 151 KCAS	V_R KCAS	139	139	139	138	138	137	137	137	137	137	137
MAX TEMP = 49°C	V_2 KCAS	143	143	143	143	143	143	143	143	143	143	143
-- 66,000 LB --												
V_{FS} = 162 KCAS	FLD LNGTH	6,040	5,690	5,320	4,980	4,690	4,560	4,480	4,410	4,310	4,160	4,020
V_{SE} = 169 KCAS	V_1 KCAS	134	132	131	129	128	128	128	128	128	128	128
V_{REF} = 149 KCAS	V_R KCAS	137	137	136	136	135	135	135	135	135	135	135
MAX TEMP = 49°C	V_2 KCAS	141	141	141	141	141	141	141	141	141	141	141
-- 64,000 LB --												
V_{FS} = 160 KCAS	FLD LNGTH	5,660	5,350	5,000	4,690	4,420	4,300	4,230	4,160	4,060	3,920	3,790
V_{SE} = 166 KCAS	V_1 KCAS	131	130	128	127	125	125	125	125	125	125	126
V_{REF} = 147 KCAS	V_R KCAS	135	134	134	133	133	132	132	132	132	132	132
MAX TEMP = 49°C	V_2 KCAS	139	139	139	139	139	139	139	139	139	139	139
-- 62,000 LB --												
V_{FS} = 157 KCAS	FLD LNGTH	5,300	5,020	4,700	4,410	4,160	4,050	3,980	3,920	3,820	3,690	3,570
V_{SE} = 164 KCAS	V_1 KCAS	128	127	125	124	123	122	122	122	123	123	123
V_{REF} = 144 KCAS	V_R KCAS	132	132	131	131	130	130	130	130	130	130	130
MAX TEMP = 49°C	V_2 KCAS	137	137	137	137	137	137	137	137	137	137	137
-- 60,000 LB --												
V_{FS} = 155 KCAS	FLD LNGTH	4,960	4,710	4,410	4,150	3,910	3,810	3,740	3,680	3,590	3,480	3,360
V_{SE} = 161 KCAS	V_1 KCAS	125	124	122	121	120	119	119	119	120	120	120
V_{REF} = 142 KCAS	V_R KCAS	130	130	129	128	128	127	127	127	127	127	127
MAX TEMP = 49°C	V_2 KCAS	135	135	135	135	135	135	135	135	135	135	135

CAUTION: DO NOT REDUCE TAKEOFF EPR BY MORE THAN .15 OR BELOW A MINIMUM VALUE OF 1.56.

NOTES:

HEADWIND:	Increase available field length 2% for each 5 knots (up to 40 knots).
TAILWIND:	Not permitted using this data at this pressure altitude.
UPHILL SLOPE:	Decrease available field length 20% for each 1% (up to 2%).
DOWNHILL SLOPE:	Not permitted using this data at this pressure altitude.
GROUND SPOILERS INOP:	Decrease available field length 800 feet.

Non-SP GIV Takeoff Planning: Flaps 20° - APA 500 Feet, ctd…

AFM APP. A

TAKEOFF PLANNING CHART

NON-SP GIV **AIRPORT PRESSURE ALTITUDE = 500 FEET** **TAKEOFF FLAP 20°**

73,200 LB MTOGW	OAT (°C)	49	45	40	35	30	25	20	15	5	-5	-15
	OAT (°F)	120	113	104	95	86	77	68	59	41	23	5
	RATED EPR	1.59	1.62	1.64	1.67	1.70	1.71	1.71	1.71	1.70	1.70	1.70
-- 58,000 LB --												
V_{FS} = 152 KCAS	FLD LNGTH	4,700	4,460	4,190	3,940	3,710	3,620	3,560	3,500	3,410	3,300	3,190
V_{SE} = 158 KCAS	V_1 KCAS	123	122	120	119	118	117	117	117	118	118	118
V_{REF} = 140 KCAS	V_R KCAS	128	128	127	127	126	126	126	126	126	126	126
MAX TEMP = 49°C	V_2 KCAS	133	133	133	133	133	133	133	133	133	133	133
-- 56,000 LB --												
V_{FS} = 150 KCAS	FLD LNGTH	4,450	4,220	3,970	3,750	3,620	3,550	3,500	3,450	3,350	3,240	3,130
V_{SE} = 156 KCAS	V_1 KCAS	121	120	118	117	117	117	118	118	118	118	118
V_{REF} = 137 KCAS	V_R KCAS	127	126	125	125	124	124	124	124	124	124	124
MAX TEMP = 49°C	V_2 KCAS	132	132	132	132	132	132	132	132	132	132	132
-- 54,000 LB --												
V_{FS} = 147 KCAS	FLD LNGTH	4,250	4,040	3,810	3,670	3,560	3,490	3,440	3,390	3,290	3,190	3,080
V_{SE} = 153 KCAS	V_1 KCAS	119	118	117	117	118	118	118	118	118	118	118
V_{REF} = 135 KCAS	V_R KCAS	126	125	124	124	123	123	123	123	123	123	123
MAX TEMP = 49°C	V_2 KCAS	131	131	131	131	131	131	131	131	131	131	131
-- 52,000 LB --												
V_{FS} = 144 KCAS	FLD LNGTH	4,100	3,900	3,720	3,600	3,500	3,430	3,380	3,330	3,230	3,130	3,030
V_{SE} = 150 KCAS	V_1 KCAS	119	117	117	117	118	118	118	118	118	118	119
V_{REF} = 132 KCAS	V_R KCAS	125	125	124	123	123	122	122	122	122	122	122
MAX TEMP = 49°C	V_2 KCAS	131	131	131	131	131	131	131	131	131	131	131
-- 50,000 LB --												
V_{FS} = 142 KCAS	FLD LNGTH	3,950	3,780	3,650	3,540	3,440	3,370	3,320	3,270	3,180	3,080	2,970
V_{SE} = 147 KCAS	V_1 KCAS	118	117	117	118	118	118	118	118	118	119	119
V_{REF} = 130 KCAS	V_R KCAS	125	124	124	123	122	122	122	122	122	122	122
MAX TEMP = 49°C	V_2 KCAS	131	131	131	131	131	131	131	131	131	131	131
-- 48,000 LB --												
V_{FS} = 139 KCAS	FLD LNGTH	3,800	3,690	3,580	3,470	3,370	3,310	3,260	3,210	3,120	3,020	2,920
V_{SE} = 144 KCAS	V_1 KCAS	117	117	117	118	118	119	119	119	119	119	119
V_{REF} = 127 KCAS	V_R KCAS	124	124	123	122	122	121	121	121	121	121	121
MAX TEMP = 49°C	V_2 KCAS	131	131	131	131	131	131	131	131	131	131	131
-- 46,000 LB --												
V_{FS} = 136 KCAS	FLD LNGTH	3,710	3,610	3,500	3,400	3,310	3,250	3,200	3,150	3,060	2,970	2,870
V_{SE} = 141 KCAS	V_1 KCAS	117	117	118	118	119	119	119	119	119	119	119
V_{REF} = 124 KCAS	V_R KCAS	124	123	123	122	121	121	121	121	121	121	121
MAX TEMP = 49°C	V_2 KCAS	131	131	131	131	131	131	131	131	131	131	131

CAUTION: DO NOT REDUCE TAKEOFF EPR BY MORE THAN .15 OR BELOW A MINIMUM VALUE OF 1.56.

NOTES:

HEADWIND: Increase available field length 2% for each 5 knots (up to 40 knots).

TAILWIND: Not permitted using this data at this pressure altitude.

UPHILL SLOPE: Decrease available field length 20% for each 1% (up to 2%).

DOWNHILL SLOPE: Not permitted using this data at this pressure altitude.

GROUND SPOILERS INOP: Decrease available field length 800 feet.

Non-SP GIV Takeoff Planning: Flaps 20° - APA 1000 Feet

AFM APP. A

TAKEOFF PLANNING CHART

NON-SP GIV **AIRPORT PRESSURE ALTITUDE = 1,000 FEET** **TAKEOFF FLAP 20°**

73,200 LB MTOGW	OAT (°C)	48	45	40	35	30	25	20	15	5	-5	-15
	OAT (°F)	118	113	104	95	86	77	68	59	41	23	5
	RATED EPR	1.60	1.62	1.64	1.66	1.70	1.71	1.71	1.71	1.71	1.71	1.71
-- 73,200 LB --												
V_{FS} = 171 KCAS	FLD LNGTH	7,860	7,460	6,870	6,390	5,980	5,740	5,630	5,540	5,410	5,230	5,050
V_{SE} = 178 KCAS	V_1 KCAS	144	143	141	140	138	138	138	138	138	138	138
V_{REF} = 157 KCAS	V_R KCAS	145	145	145	144	144	144	144	144	144	144	144
MAX TEMP = 48°C	V_2 KCAS	149	149	149	149	149	149	149	149	149	149	149
-- 72,000 LB --												
V_{FS} = 170 KCAS	FLD LNGTH	7,520	7,170	6,630	6,170	5,790	5,560	5,450	5,360	5,240	5,060	4,880
V_{SE} = 177 KCAS	V_1 KCAS	143	142	140	138	137	136	136	136	136	137	137
V_{REF} = 156 KCAS	V_R KCAS	143	143	143	143	143	142	142	142	142	142	142
MAX TEMP = 48°C	V_2 KCAS	147	147	147	147	147	147	147	147	147	147	147
-- 70,000 LB --												
V_{FS} = 167 KCAS	FLD LNGTH	7,060	6,730	6,240	5,830	5,470	5,260	5,160	5,080	4,950	4,790	4,620
V_{SE} = 174 KCAS	V_1 KCAS	140	139	137	135	134	134	134	134	134	134	134
V_{REF} = 154 KCAS	V_R KCAS	141	141	141	141	140	140	140	140	140	140	140
MAX TEMP = 48°C	V_2 KCAS	145	145	145	145	145	145	145	145	145	145	145
-- 68,000 LB --												
V_{FS} = 165 KCAS	FLD LNGTH	6,610	6,320	5,880	5,500	5,160	4,960	4,870	4,790	4,680	4,520	4,360
V_{SE} = 172 KCAS	V_1 KCAS	137	136	134	133	131	131	131	131	131	131	131
V_{REF} = 151 KCAS	V_R KCAS	139	139	139	138	138	138	137	137	137	137	137
MAX TEMP = 48°C	V_2 KCAS	143	143	143	143	143	143	143	143	143	143	143
-- 66,000 LB --												
V_{FS} = 162 KCAS	FLD LNGTH	6,190	5,930	5,530	5,180	4,870	4,680	4,590	4,520	4,410	4,260	4,120
V_{SE} = 169 KCAS	V_1 KCAS	134	133	131	130	129	128	128	128	128	128	128
V_{REF} = 149 KCAS	V_R KCAS	137	137	137	136	135	135	135	135	135	135	135
MAX TEMP = 48°C	V_2 KCAS	141	141	141	141	141	141	141	141	141	141	141
-- 64,000 LB --												
V_{FS} = 160 KCAS	FLD LNGTH	5,800	5,560	5,200	4,870	4,580	4,410	4,330	4,260	4,160	4,020	3,880
V_{SE} = 166 KCAS	V_1 KCAS	131	130	129	127	126	125	125	125	126	126	126
V_{REF} = 147 KCAS	V_R KCAS	135	135	134	134	133	133	133	133	133	133	133
MAX TEMP = 48°C	V_2 KCAS	139	139	139	139	139	139	139	139	139	139	139
-- 62,000 LB --												
V_{FS} = 157 KCAS	FLD LNGTH	5,430	5,220	4,880	4,580	4,320	4,150	4,080	4,010	3,910	3,780	3,650
V_{SE} = 164 KCAS	V_1 KCAS	128	127	126	124	123	122	122	122	123	123	123
V_{REF} = 144 KCAS	V_R KCAS	132	132	132	131	130	130	130	130	130	130	130
MAX TEMP = 48°C	V_2 KCAS	137	137	137	137	137	137	137	137	137	137	137
-- 60,000 LB --												
V_{FS} = 155 KCAS	FLD LNGTH	5,080	4,890	4,580	4,310	4,060	3,910	3,830	3,770	3,680	3,560	3,440
V_{SE} = 161 KCAS	V_1 KCAS	125	124	123	122	120	120	120	120	120	120	120
V_{REF} = 142 KCAS	V_R KCAS	130	130	129	129	128	128	128	128	128	128	128
MAX TEMP = 48°C	V_2 KCAS	135	135	135	135	135	135	135	135	135	135	135

CAUTION: DO NOT REDUCE TAKEOFF EPR BY MORE THAN .15 OR BELOW A MINIMUM VALUE OF 1.56.

NOTES:

HEADWIND:	Increase available field length 2% for each 5 knots (up to 40 knots).
TAILWIND:	Not permitted using this data at this pressure altitude.
UPHILL SLOPE:	Decrease available field length 20% for each 1% (up to 2%).
DOWNHILL SLOPE:	Not permitted using this data at this pressure altitude.
GROUND SPOILERS INOP:	Decrease available field length 800 feet.

Non-SP GIV Takeoff Planning: Flaps 20° - APA 1000 Feet, ctd…

AFM APP. A

TAKEOFF PLANNING CHART

NON-SP GIV **AIRPORT PRESSURE ALTITUDE = 1,000 FEET** **TAKEOFF FLAP 20°**

73,200 LB MTOGW	OAT (°C)	48	45	40	35	30	25	20	15	5	-5	-15
	OAT (°F)	118	113	104	95	86	77	68	59	41	23	5
	RATED EPR	1.60	1.62	1.64	1.66	1.70	1.71	1.71	1.71	1.71	1.71	1.71
-- 58,000 LB --												
V_{FS} = 152 KCAS	FLD LNGTH	4,820	4,630	4,350	4,080	3,850	3,710	3,640	3,580	3,500	3,380	3,260
V_{SE} = 158 KCAS	V_1 KCAS	123	122	121	119	118	117	117	117	118	118	118
V_{REF} = 140 KCAS	V_R KCAS	128	128	127	127	126	126	126	126	126	126	126
MAX TEMP = 48°C	V_2 KCAS	133	133	133	133	133	133	133	133	133	133	133
-- 56,000 LB --												
V_{FS} = 150 KCAS	FLD LNGTH	4,560	4,380	4,120	3,870	3,710	3,630	3,570	3,510	3,410	3,300	3,190
V_{SE} = 156 KCAS	V_1 KCAS	121	120	119	117	117	117	117	118	118	118	118
V_{REF} = 137 KCAS	V_R KCAS	127	126	126	125	124	124	124	124	124	124	124
MAX TEMP = 48°C	V_2 KCAS	132	132	132	132	132	132	132	132	132	132	132
-- 54,000 LB --												
V_{FS} = 147 KCAS	FLD LNGTH	4,350	4,190	3,940	3,760	3,650	3,560	3,510	3,450	3,360	3,250	3,140
V_{SE} = 153 KCAS	V_1 KCAS	119	119	117	117	117	118	118	118	118	118	118
V_{REF} = 135 KCAS	V_R KCAS	126	125	125	124	123	123	123	123	123	123	123
MAX TEMP = 48°C	V_2 KCAS	131	131	131	131	131	131	131	131	131	131	131
-- 52,000 LB --												
V_{FS} = 144 KCAS	FLD LNGTH	4,200	4,040	3,830	3,690	3,580	3,500	3,450	3,390	3,300	3,190	3,080
V_{SE} = 150 KCAS	V_1 KCAS	119	118	117	117	118	118	118	118	118	118	118
V_{REF} = 132 KCAS	V_R KCAS	125	125	124	124	123	122	122	122	122	122	122
MAX TEMP = 48°C	V_2 KCAS	131	131	131	131	131	131	131	131	131	131	131
-- 50,000 LB --												
V_{FS} = 142 KCAS	FLD LNGTH	4,050	3,900	3,740	3,620	3,520	3,440	3,390	3,330	3,240	3,140	3,030
V_{SE} = 147 KCAS	V_1 KCAS	118	117	117	117	118	118	118	118	118	118	119
V_{REF} = 130 KCAS	V_R KCAS	125	125	124	123	122	122	122	122	122	122	122
MAX TEMP = 48°C	V_2 KCAS	131	131	131	131	131	131	131	131	131	131	131
-- 48,000 LB --												
V_{FS} = 139 KCAS	FLD LNGTH	3,900	3,800	3,660	3,550	3,450	3,380	3,320	3,270	3,180	3,080	2,980
V_{SE} = 144 KCAS	V_1 KCAS	117	117	117	118	118	118	119	119	119	119	119
V_{REF} = 127 KCAS	V_R KCAS	124	124	123	123	122	122	121	121	121	121	121
MAX TEMP = 48°C	V_2 KCAS	131	131	131	131	131	131	131	131	131	131	131
-- 46,000 LB --												
V_{FS} = 136 KCAS	FLD LNGTH	3,780	3,700	3,590	3,480	3,390	3,320	3,260	3,210	3,120	3,020	2,920
V_{SE} = 141 KCAS	V_1 KCAS	117	117	117	118	118	119	119	119	119	119	119
V_{REF} = 124 KCAS	V_R KCAS	124	124	123	122	121	121	121	121	121	121	121
MAX TEMP = 48°C	V_2 KCAS	131	131	131	131	131	131	131	131	131	131	131

CAUTION: DO NOT REDUCE TAKEOFF EPR BY MORE THAN .15 OR BELOW A MINIMUM VALUE OF 1.56.

NOTES:

- HEADWIND: Increase available field length 2% for each 5 knots (up to 40 knots).
- TAILWIND: Not permitted using this data at this pressure altitude.
- UPHILL SLOPE: Decrease available field length 20% for each 1% (up to 2%).
- DOWNHILL SLOPE: Not permitted using this data at this pressure altitude.
- GROUND SPOILERS INOP: Decrease available field length 800 feet.

Non-SP GIV Takeoff Planning: Flaps 20° - APA 2000 Feet

AFM APP. A

TAKEOFF PLANNING CHART

NON-SP GIV **AIRPORT PRESSURE ALTITUDE = 2,000 FEET** **TAKEOFF FLAP 20°**

73,200 LB MTOGW	OAT (°C)	45	40	35	30	25	20	15	10	0	-10	-19
	OAT (°F)	113	104	95	86	77	68	59	50	32	14	-2
	RATED EPR	1.62	1.64	1.66	1.69	1.71	1.72	1.72	1.72	1.72	1.72	1.72
-- 73,200 LB --												
V_{FS} = 171 KCAS	FLD LNGTH	8,250	7,480	6,940	6,470	6,130	5,990	5,850	5,730	5,590	5,400	5,230
V_{SE} = 178 KCAS	V_1 KCAS	144	143	141	140	138	138	138	138	138	138	139
V_{REF} = 157 KCAS	V_R KCAS	145	145	145	144	144	144	144	144	144	144	144
MAX TEMP = 46°C	V_2 KCAS	149	149	149	149	149	149	149	149	149	149	149
-- 72,000 LB --												
V_{FS} = 170 KCAS	FLD LNGTH	7,870	7,210	6,690	6,260	5,930	5,790	5,660	5,550	5,410	5,220	5,060
V_{SE} = 177 KCAS	V_1 KCAS	143	141	139	138	137	137	137	136	137	137	137
V_{REF} = 156 KCAS	V_R KCAS	143	143	143	143	143	143	143	142	142	142	142
MAX TEMP = 46°C	V_2 KCAS	147	147	147	147	147	147	147	147	147	147	147
-- 70,000 LB --												
V_{FS} = 167 KCAS	FLD LNGTH	7,350	6,780	6,310	5,910	5,610	5,480	5,360	5,250	5,120	4,940	4,790
V_{SE} = 174 KCAS	V_1 KCAS	140	138	137	135	134	134	134	134	134	134	134
V_{REF} = 154 KCAS	V_R KCAS	141	141	141	141	140	140	140	140	140	140	140
MAX TEMP = 46°C	V_2 KCAS	145	145	145	145	145	145	145	145	145	145	145
-- 68,000 LB --												
V_{FS} = 165 KCAS	FLD LNGTH	6,880	6,370	5,940	5,570	5,290	5,170	5,060	4,950	4,830	4,670	4,520
V_{SE} = 172 KCAS	V_1 KCAS	137	135	134	132	132	131	131	131	131	131	132
V_{REF} = 151 KCAS	V_R KCAS	139	139	139	138	138	138	138	138	138	138	138
MAX TEMP = 46°C	V_2 KCAS	143	143	143	143	143	143	143	143	143	143	143
-- 66,000 LB --												
V_{FS} = 162 KCAS	FLD LNGTH	6,440	5,980	5,590	5,250	4,990	4,880	4,770	4,670	4,550	4,400	4,260
V_{SE} = 169 KCAS	V_1 KCAS	134	132	131	130	129	129	129	128	129	129	129
V_{REF} = 149 KCAS	V_R KCAS	137	137	136	136	135	135	135	135	135	135	135
MAX TEMP = 46°C	V_2 KCAS	141	141	141	141	141	141	141	141	141	141	141
-- 64,000 LB --												
V_{FS} = 160 KCAS	FLD LNGTH	6,030	5,610	5,260	4,940	4,700	4,590	4,490	4,400	4,290	4,150	4,010
V_{SE} = 166 KCAS	V_1 KCAS	131	130	128	127	126	126	126	126	126	126	126
V_{REF} = 147 KCAS	V_R KCAS	135	135	134	133	133	133	133	133	133	133	133
MAX TEMP = 46°C	V_2 KCAS	139	139	139	139	139	139	139	139	139	139	139
-- 62,000 LB --												
V_{FS} = 157 KCAS	FLD LNGTH	5,640	5,270	4,940	4,650	4,420	4,320	4,230	4,140	4,040	3,900	3,780
V_{SE} = 164 KCAS	V_1 KCAS	128	127	126	124	123	123	123	123	123	123	123
V_{REF} = 145 KCAS	V_R KCAS	133	132	132	131	130	130	130	130	130	130	130
MAX TEMP = 46°C	V_2 KCAS	137	137	137	137	137	137	137	137	137	137	137
-- 60,000 LB --												
V_{FS} = 155 KCAS	FLD LNGTH	5,280	4,940	4,640	4,370	4,150	4,060	3,980	3,890	3,800	3,670	3,550
V_{SE} = 161 KCAS	V_1 KCAS	125	124	123	121	120	120	120	120	120	120	120
V_{REF} = 142 KCAS	V_R KCAS	130	130	129	128	128	128	128	128	128	128	128
MAX TEMP = 46°C	V_2 KCAS	135	135	135	135	135	135	135	135	135	135	135

CAUTION: DO NOT REDUCE TAKEOFF EPR BY MORE THAN .15 OR BELOW A MINIMUM VALUE OF 1.56.

NOTES:

HEADWIND:	Increase available field length 2% for each 5 knots (up to 40 knots).
TAILWIND:	Not permitted using this data at this pressure altitude.
UPHILL SLOPE:	Decrease available field length 20% for each 1% (up to 2%).
DOWNHILL SLOPE:	Not permitted using this data at this pressure altitude.
GROUND SPOILERS INOP:	Decrease available field length 800 feet.

Non-SP GIV Takeoff Planning: Flaps 20° - APA 2000 Feet, ctd…

AFM APP. A

TAKEOFF PLANNING CHART

NON-SP GIV **AIRPORT PRESSURE ALTITUDE = 2,000 FEET** **TAKEOFF FLAP 20°**

73,200 LB MTOGW	OAT (°C)	45	40	35	30	25	20	15	10	0	-10	-19
	OAT (°F)	113	104	95	86	77	68	59	50	32	14	-2
	RATED EPR	1.62	1.64	1.66	1.69	1.71	1.72	1.72	1.72	1.72	1.72	1.72
-- 58,000 LB --												
V_{FS} = 152 KCAS	FLD LNGTH	5,000	4,680	4,400	4,140	3,940	3,860	3,780	3,700	3,610	3,480	3,370
V_{SE} = 158 KCAS	V_1 KCAS	123	122	121	119	118	118	118	118	118	118	118
V_{REF} = 140 KCAS	V_R KCAS	129	128	127	127	126	126	126	126	126	126	126
MAX TEMP = 46°C	V_2 KCAS	133	133	133	133	133	133	133	133	133	133	133
-- 56,000 LB --												
V_{FS} = 150 KCAS	FLD LNGTH	4,730	4,430	4,170	3,940	3,790	3,730	3,660	3,600	3,490	3,380	3,270
V_{SE} = 156 KCAS	V_1 KCAS	121	120	118	117	117	117	117	117	117	117	118
V_{REF} = 137 KCAS	V_R KCAS	127	126	126	125	124	124	124	124	124	124	124
MAX TEMP = 46°C	V_2 KCAS	132	132	132	132	132	132	132	132	132	132	132
-- 54,000 LB --												
V_{FS} = 147 KCAS	FLD LNGTH	4,520	4,240	4,000	3,830	3,730	3,660	3,600	3,540	3,430	3,320	3,220
V_{SE} = 153 KCAS	V_1 KCAS	120	118	117	117	117	117	117	118	118	118	118
V_{REF} = 135 KCAS	V_R KCAS	126	125	124	124	123	123	123	123	123	123	123
MAX TEMP = 46°C	V_2 KCAS	131	131	131	131	131	131	131	131	131	131	131
-- 52,000 LB --												
V_{FS} = 144 KCAS	FLD LNGTH	4,360	4,090	3,880	3,760	3,660	3,600	3,530	3,470	3,370	3,260	3,160
V_{SE} = 150 KCAS	V_1 KCAS	119	118	117	117	117	117	118	118	118	118	118
V_{REF} = 132 KCAS	V_R KCAS	125	125	124	123	123	123	123	123	123	123	123
MAX TEMP = 46°C	V_2 KCAS	131	131	131	131	131	131	131	131	131	131	131
-- 50,000 LB --												
V_{FS} = 142 KCAS	FLD LNGTH	4,200	3,960	3,800	3,690	3,590	3,530	3,470	3,410	3,310	3,200	3,110
V_{SE} = 147 KCAS	V_1 KCAS	118	117	117	117	118	118	118	118	118	118	118
V_{REF} = 130 KCAS	V_R KCAS	125	124	124	123	122	122	122	122	122	122	122
MAX TEMP = 46°C	V_2 KCAS	131	131	131	131	131	131	131	131	131	131	131
-- 48,000 LB --												
V_{FS} = 139 KCAS	FLD LNGTH	4,050	3,850	3,730	3,620	3,520	3,460	3,410	3,350	3,250	3,140	3,050
V_{SE} = 144 KCAS	V_1 KCAS	118	117	117	118	118	118	118	118	118	119	119
V_{REF} = 127 KCAS	V_R KCAS	125	124	123	123	122	122	122	122	122	122	122
MAX TEMP = 46°C	V_2 KCAS	131	131	131	131	131	131	131	131	131	131	131
-- 46,000 LB --												
V_{FS} = 136 KCAS	FLD LNGTH	3,900	3,770	3,650	3,550	3,460	3,400	3,340	3,290	3,190	3,090	2,990
V_{SE} = 141 KCAS	V_1 KCAS	117	117	117	118	118	118	119	119	119	119	119
V_{REF} = 124 KCAS	V_R KCAS	124	123	123	122	122	121	121	121	121	121	121
MAX TEMP = 46°C	V_2 KCAS	131	131	131	131	131	131	131	131	131	131	131

CAUTION: DO NOT REDUCE TAKEOFF EPR BY MORE THAN .15 OR BELOW A MINIMUM VALUE OF 1.56.

NOTES:

HEADWIND:	Increase available field length 2% for each 5 knots (up to 40 knots).
TAILWIND:	Not permitted using this data at this pressure altitude.
UPHILL SLOPE:	Decrease available field length 20% for each 1% (up to 2%).
DOWNHILL SLOPE:	Not permitted using this data at this pressure altitude.
GROUND SPOILERS INOP:	Decrease available field length 800 feet.

Non-SP GIV Takeoff Planning: Flaps 20° - APA 4000 Feet

AFM APP. A

TAKEOFF PLANNING CHART

NON-SP GIV **AIRPORT PRESSURE ALTITUDE = 4,000 FEET** **TAKEOFF FLAP 20°**

73,200 LB MTOGW	OAT (°C)	40	35	30	25	20	15	10	5	-5	-15	-23
	OAT (°F)	104	95	86	77	68	59	50	41	23	5	-9
	RATED EPR	1.63	1.66	1.69	1.71	1.72	1.74	1.74	1.74	1.74	1.74	1.74
-- 73,200 LB --												
V_{FS} = 173 KCAS	FLD LNGTH	******	******	******	7,290	6,990	6,740	6,520	6,410	6,170	5,960	5,790
V_{SE} = 180 KCAS	V_1 KCAS	******	******	******	142	141	141	140	140	140	140	140
V_{REF} = 157 KCAS	V_R KCAS	******	******	******	146	145	145	145	145	145	145	145
MAX TEMP = 25°C	V_2 KCAS	******	******	******	150	150	150	150	150	150	150	150
-- 72,000 LB --												
V_{FS} = 171 KCAS	FLD LNGTH	******	8,050	7,470	7,040	6,750	6,510	6,310	6,200	5,970	5,760	5,600
V_{SE} = 178 KCAS	V_1 KCAS	******	143	141	140	139	139	139	139	139	139	139
V_{REF} = 156 KCAS	V_R KCAS	******	144	144	144	144	144	144	144	144	144	144
MAX TEMP = 38°C	V_2 KCAS	******	148	148	148	148	148	148	148	148	148	148
-- 70,000 LB --												
V_{FS} = 169 KCAS	FLD LNGTH	8,260	7,570	7,040	6,640	6,370	6,150	5,960	5,870	5,650	5,450	5,300
V_{SE} = 176 KCAS	V_1 KCAS	142	140	138	137	137	136	136	136	136	136	136
V_{REF} = 154 KCAS	V_R KCAS	142	142	142	142	142	142	142	142	142	142	142
MAX TEMP = 42°C	V_2 KCAS	146	146	146	146	146	146	146	146	146	146	146
-- 68,000 LB --												
V_{FS} = 166 KCAS	FLD LNGTH	7,670	7,090	6,610	6,250	6,010	5,800	5,630	5,540	5,330	5,140	5,000
V_{SE} = 173 KCAS	V_1 KCAS	139	137	136	135	134	134	133	133	133	133	133
V_{REF} = 151 KCAS	V_R KCAS	140	140	140	140	140	139	139	139	139	139	139
MAX TEMP = 42°C	V_2 KCAS	144	144	144	144	144	144	144	144	144	144	144
-- 66,000 LB --												
V_{FS} = 164 KCAS	FLD LNGTH	7,170	6,650	6,210	5,890	5,660	5,470	5,300	5,220	5,020	4,850	4,710
V_{SE} = 171 KCAS	V_1 KCAS	136	134	133	132	131	131	130	130	130	130	130
V_{REF} = 149 KCAS	V_R KCAS	138	138	138	137	137	137	137	137	137	137	137
MAX TEMP = 42°C	V_2 KCAS	142	142	142	142	142	142	142	142	142	142	142
-- 64,000 LB --												
V_{FS} = 161 KCAS	FLD LNGTH	6,700	6,230	5,830	5,540	5,330	5,150	4,990	4,910	4,730	4,570	4,440
V_{SE} = 168 KCAS	V_1 KCAS	133	131	130	129	128	128	128	128	128	128	128
V_{REF} = 147 KCAS	V_R KCAS	136	136	135	135	135	134	134	134	134	134	134
MAX TEMP = 42°C	V_2 KCAS	140	140	140	140	140	140	140	140	140	140	140
-- 62,000 LB --												
V_{FS} = 159 KCAS	FLD LNGTH	6,270	5,840	5,480	5,200	5,010	4,840	4,700	4,620	4,450	4,300	4,180
V_{SE} = 165 KCAS	V_1 KCAS	130	129	127	126	126	125	125	125	125	125	125
V_{REF} = 145 KCAS	V_R KCAS	134	133	133	132	132	132	132	132	132	132	132
MAX TEMP = 42°C	V_2 KCAS	138	138	138	138	138	138	138	138	138	138	138
-- 60,000 LB --												
V_{FS} = 156 KCAS	FLD LNGTH	5,850	5,470	5,140	4,880	4,700	4,550	4,410	4,340	4,180	4,040	3,920
V_{SE} = 163 KCAS	V_1 KCAS	127	126	124	123	123	122	122	122	122	122	122
V_{REF} = 142 KCAS	V_R KCAS	131	131	130	130	130	129	129	129	129	129	129
MAX TEMP = 42°C	V_2 KCAS	135	135	135	135	135	135	135	135	135	135	135

CAUTION: DO NOT REDUCE TAKEOFF EPR BY MORE THAN .15 OR BELOW A MINIMUM VALUE OF 1.56.

NOTES:

HEADWIND:	Increase available field length 2% for each 5 knots (up to 40 knots).
TAILWIND:	Not permitted using this data at this pressure altitude.
UPHILL SLOPE:	Decrease available field length 20% for each 1% (up to 2%).
DOWNHILL SLOPE:	Not permitted using this data at this pressure altitude.
GROUND SPOILERS INOP:	Decrease available field length 800 feet.

Non-SP GIV Takeoff Planning: Flaps 20° - APA 4000 Feet, ctd…

AFM APP. A

TAKEOFF PLANNING CHART

NON-SP GIV **AIRPORT PRESSURE ALTITUDE = 4,000 FEET** **TAKEOFF FLAP 20°**

73,200 LB MTOGW	OAT (°C)	40	35	30	25	20	15	10	5	-5	-15	-23
	OAT (°F)	104	95	86	77	68	59	50	41	23	5	-9
	RATED EPR	1.63	1.66	1.69	1.71	1.72	1.74	1.74	1.74	1.74	1.74	1.74
-- 58,000 LB --												
V_{FS} = 154 KCAS	FLD LNGTH	5,510	5,150	4,850	4,610	4,440	4,290	4,170	4,100	3,950	3,810	3,700
V_{SE} = 160 KCAS	V_1 KCAS	125	123	122	121	120	120	119	120	119	120	120
V_{REF} = 140 KCAS	V_R KCAS	129	129	128	128	128	127	127	127	127	127	127
MAX TEMP = 42°C	V_2 KCAS	134	134	134	134	134	134	134	134	134	134	134
-- 56,000 LB --												
V_{FS} = 151 KCAS	FLD LNGTH	5,170	4,850	4,570	4,340	4,180	4,050	3,930	3,870	3,730	3,600	3,500
V_{SE} = 157 KCAS	V_1 KCAS	122	121	119	119	118	117	117	117	117	117	117
V_{REF} = 137 KCAS	V_R KCAS	127	127	126	126	125	125	125	125	125	125	125
MAX TEMP = 42°C	V_2 KCAS	132	132	132	132	132	132	132	132	132	132	132
-- 54,000 LB --												
V_{FS} = 148 KCAS	FLD LNGTH	4,920	4,620	4,350	4,140	4,020	3,930	3,850	3,790	3,660	3,530	3,440
V_{SE} = 154 KCAS	V_1 KCAS	120	119	118	117	117	117	117	117	117	117	117
V_{REF} = 135 KCAS	V_R KCAS	126	126	125	124	124	124	124	124	123	123	123
MAX TEMP = 42°C	V_2 KCAS	131	131	131	131	131	131	131	131	131	131	131
-- 52,000 LB --												
V_{FS} = 146 KCAS	FLD LNGTH	4,750	4,460	4,210	4,040	3,940	3,860	3,780	3,720	3,590	3,470	3,380
V_{SE} = 151 KCAS	V_1 KCAS	120	118	117	117	117	117	117	117	117	117	118
V_{REF} = 132 KCAS	V_R KCAS	126	125	125	124	124	123	123	123	123	123	123
MAX TEMP = 42°C	V_2 KCAS	131	131	131	131	131	131	131	131	131	131	131
-- 50,000 LB --												
V_{FS} = 143 KCAS	FLD LNGTH	4,580	4,300	4,080	3,960	3,870	3,780	3,710	3,650	3,520	3,410	3,310
V_{SE} = 148 KCAS	V_1 KCAS	119	118	117	117	117	117	118	118	118	118	118
V_{REF} = 130 KCAS	V_R KCAS	125	125	124	124	123	123	123	123	123	123	123
MAX TEMP = 42°C	V_2 KCAS	131	131	131	131	131	131	131	131	131	131	131
-- 48,000 LB --												
V_{FS} = 140 KCAS	FLD LNGTH	4,400	4,160	3,990	3,880	3,790	3,710	3,630	3,580	3,460	3,340	3,250
V_{SE} = 145 KCAS	V_1 KCAS	118	117	117	117	117	118	118	118	118	118	118
V_{REF} = 127 KCAS	V_R KCAS	125	124	124	123	123	123	122	122	122	122	122
MAX TEMP = 42°C	V_2 KCAS	131	131	131	131	131	131	131	131	131	131	131
-- 46,000 LB --												
V_{FS} = 137 KCAS	FLD LNGTH	4,230	4,030	3,900	3,800	3,710	3,640	3,560	3,510	3,390	3,280	3,190
V_{SE} = 142 KCAS	V_1 KCAS	117	117	117	117	118	118	118	118	118	118	119
V_{REF} = 124 KCAS	V_R KCAS	125	124	123	123	122	122	122	122	122	122	122
MAX TEMP = 42°C	V_2 KCAS	131	131	131	131	131	131	131	131	131	131	131

CAUTION: DO NOT REDUCE TAKEOFF EPR BY MORE THAN .15 OR BELOW A MINIMUM VALUE OF 1.56.

NOTES:

HEADWIND:	Increase available field length 2% for each 5 knots (up to 40 knots).
TAILWIND:	Not permitted using this data at this pressure altitude.
UPHILL SLOPE:	Decrease available field length 20% for each 1% (up to 2%).
DOWNHILL SLOPE:	Not permitted using this data at this pressure altitude.
GROUND SPOILERS INOP:	Decrease available field length 800 feet.

Non-SP GIV Takeoff Planning: Flaps 20° - APA 6000 Feet

AFM APP. A

TAKEOFF PLANNING CHART

NON-SP GIV **AIRPORT PRESSURE ALTITUDE = 6,000 FEET** **TAKEOFF FLAP 20°**

73,200 LB MTOGW	OAT (°C)	38	35	30	25	20	15	10	5	-5	-15	-25
	OAT (°F)	101	95	86	77	68	59	50	41	23	5	-13
	RATED EPR	1.64	1.65	1.68	1.71	1.72	1.73	1.74	1.74	1.75	1.75	1.75
-- 73,200 LB --												
V_{FS} = 175 KCAS	FLD LNGTH	******	******	******	******	******	******	******	******	7,300	7,050	6,790
V_{SE} = 182 KCAS	V_1 KCAS	******	******	******	******	******	******	******	******	143	144	144
V_{REF} = 158 KCAS	V_R KCAS	******	******	******	******	******	******	******	******	147	147	147
MAX TEMP = 0°C	V_2 KCAS	******	******	******	******	******	******	******	******	151	151	151
-- 72,000 LB --												
V_{FS} = 174 KCAS	FLD LNGTH	******	******	******	******	******	******	******	7,380	7,050	6,800	6,560
V_{SE} = 181 KCAS	V_1 KCAS	******	******	******	******	******	******	******	142	142	142	142
V_{REF} = 157 KCAS	V_R KCAS	******	******	******	******	******	******	******	146	146	146	146
MAX TEMP = 9°C	V_2 KCAS	******	******	******	******	******	******	******	150	150	150	150
-- 70,000 LB --												
V_{FS} = 171 KCAS	FLD LNGTH	******	******	******	8,030	7,680	7,400	7,130	6,960	6,650	6,410	6,180
V_{SE} = 178 KCAS	V_1 KCAS	******	******	******	141	141	140	140	139	139	139	139
V_{REF} = 154 KCAS	V_R KCAS	******	******	******	144	144	144	144	144	144	144	144
MAX TEMP = 26°C	V_2 KCAS	******	******	******	148	148	148	148	148	148	148	148
-- 68,000 LB --												
V_{FS} = 169 KCAS	FLD LNGTH	9,260	8,700	7,990	7,530	7,220	6,950	6,710	6,550	6,260	6,040	5,820
V_{SE} = 175 KCAS	V_1 KCAS	141	141	140	138	138	137	137	136	136	136	137
V_{REF} = 152 KCAS	V_R KCAS	142	142	142	142	142	141	141	141	141	141	141
MAX TEMP = 38°C	V_2 KCAS	146	146	146	146	146	146	146	146	146	146	146
-- 66,000 LB --												
V_{FS} = 166 KCAS	FLD LNGTH	8,470	8,070	7,480	7,060	6,770	6,530	6,310	6,160	5,900	5,690	5,480
V_{SE} = 173 KCAS	V_1 KCAS	139	138	137	135	135	134	134	134	134	134	134
V_{REF} = 150 KCAS	V_R KCAS	139	139	139	139	139	139	139	139	139	139	139
MAX TEMP = 38°C	V_2 KCAS	143	143	143	143	143	143	143	143	143	143	143
-- 64,000 LB --												
V_{FS} = 163 KCAS	FLD LNGTH	7,890	7,530	7,000	6,620	6,360	6,140	5,930	5,800	5,550	5,350	5,160
V_{SE} = 170 KCAS	V_1 KCAS	136	135	134	133	132	131	131	131	131	131	131
V_{REF} = 148 KCAS	V_R KCAS	137	137	137	137	137	137	137	136	136	136	136
MAX TEMP = 38°C	V_2 KCAS	141	141	141	141	141	141	141	141	141	141	141
-- 62,000 LB --												
V_{FS} = 161 KCAS	FLD LNGTH	7,350	7,030	6,550	6,210	5,970	5,760	5,570	5,450	5,210	5,030	4,850
V_{SE} = 167 KCAS	V_1 KCAS	133	132	131	130	129	129	128	128	128	128	128
V_{REF} = 145 KCAS	V_R KCAS	135	135	135	135	134	134	134	134	134	134	134
MAX TEMP = 38°C	V_2 KCAS	139	139	139	139	139	139	139	139	139	139	139
-- 60,000 LB --												
V_{FS} = 158 KCAS	FLD LNGTH	6,850	6,560	6,130	5,820	5,600	5,410	5,230	5,110	4,890	4,720	4,550
V_{SE} = 165 KCAS	V_1 KCAS	130	129	128	127	126	126	125	125	125	125	125
V_{REF} = 143 KCAS	V_R KCAS	133	133	133	132	132	132	132	131	131	131	131
MAX TEMP = 38°C	V_2 KCAS	137	137	137	137	137	137	137	137	137	137	137

CAUTION: DO NOT REDUCE TAKEOFF EPR BY MORE THAN .15 OR BELOW A MINIMUM VALUE OF 1.56.

NOTES:

HEADWIND:	Increase available field length 2% for each 5 knots (up to 40 knots).
TAILWIND:	Not permitted using this data at this pressure altitude.
UPHILL SLOPE:	Decrease available field length 20% for each 1% (up to 2%).
DOWNHILL SLOPE:	Not permitted using this data at this pressure altitude.
GROUND SPOILERS INOP:	Decrease available field length 800 feet.

Non-SP GIV Takeoff Planning: Flaps 20° - APA 6000 Feet, ctd…
AFM APP. A

TAKEOFF PLANNING CHART

NON-SP GIV **AIRPORT PRESSURE ALTITUDE = 6,000 FEET** **TAKEOFF FLAP 20°**

73,200 LB MTOGW	OAT (°C)	38	35	30	25	20	15	10	5	-5	-15	-25
	OAT (°F)	101	95	86	77	68	59	50	41	23	5	-13
	RATED EPR	1.64	1.65	1.68	1.71	1.72	1.73	1.74	1.74	1.75	1.75	1.75
-- 58,000 LB --												
V_{FS} = 156 KCAS	FLD LNGTH	6,370	6,110	5,720	5,440	5,230	5,060	4,890	4,790	4,580	4,420	4,260
V_{SE} = 162 KCAS	V_1 KCAS	127	126	125	124	123	123	122	122	122	122	122
V_{REF} = 140 KCAS	V_R KCAS	130	130	130	130	129	129	129	129	129	129	129
MAX TEMP = 38°C	V_2 KCAS	134	134	134	134	134	134	134	134	134	134	134
-- 56,000 LB --												
V_{FS} = 153 KCAS	FLD LNGTH	5,920	5,690	5,340	5,080	4,890	4,730	4,570	4,480	4,290	4,140	3,990
V_{SE} = 159 KCAS	V_1 KCAS	124	123	122	121	120	120	119	119	119	119	119
V_{REF} = 138 KCAS	V_R KCAS	128	128	127	127	127	126	126	126	126	126	126
MAX TEMP = 38°C	V_2 KCAS	132	132	132	132	132	132	132	132	132	132	132
-- 54,000 LB --												
V_{FS} = 150 KCAS	FLD LNGTH	5,600	5,390	5,070	4,820	4,640	4,490	4,350	4,250	4,070	3,930	3,790
V_{SE} = 156 KCAS	V_1 KCAS	122	121	120	119	118	118	117	117	117	117	117
V_{REF} = 135 KCAS	V_R KCAS	127	126	126	125	125	125	125	125	124	124	124
MAX TEMP = 38°C	V_2 KCAS	131	131	131	131	131	131	131	131	131	131	131
-- 52,000 LB --												
V_{FS} = 147 KCAS	FLD LNGTH	5,400	5,200	4,890	4,650	4,480	4,340	4,200	4,110	3,950	3,820	3,690
V_{SE} = 153 KCAS	V_1 KCAS	121	120	119	118	118	117	117	117	117	117	117
V_{REF} = 133 KCAS	V_R KCAS	126	126	126	125	125	125	124	124	124	124	124
MAX TEMP = 38°C	V_2 KCAS	131	131	131	131	131	131	131	131	131	131	131
-- 50,000 LB --												
V_{FS} = 145 KCAS	FLD LNGTH	5,200	5,010	4,710	4,480	4,320	4,200	4,100	4,020	3,880	3,740	3,610
V_{SE} = 150 KCAS	V_1 KCAS	120	120	118	117	117	117	117	117	117	117	117
V_{REF} = 130 KCAS	V_R KCAS	126	126	125	125	124	124	124	124	124	124	124
MAX TEMP = 38°C	V_2 KCAS	131	131	131	131	131	131	131	131	131	131	131
-- 48,000 LB --												
V_{FS} = 141 KCAS	FLD LNGTH	5,000	4,820	4,530	4,320	4,190	4,100	4,010	3,940	3,800	3,670	3,540
V_{SE} = 147 KCAS	V_1 KCAS	120	119	118	117	117	117	117	117	117	117	118
V_{REF} = 128 KCAS	V_R KCAS	126	125	125	124	124	124	123	123	123	123	123
MAX TEMP = 38°C	V_2 KCAS	131	131	131	131	131	131	131	131	131	131	131
-- 46,000 LB --												
V_{FS} = 138 KCAS	FLD LNGTH	4,810	4,630	4,360	4,200	4,100	4,010	3,930	3,860	3,720	3,590	3,470
V_{SE} = 144 KCAS	V_1 KCAS	119	118	117	117	117	117	117	117	117	118	118
V_{REF} = 125 KCAS	V_R KCAS	125	125	124	124	124	123	123	123	123	123	123
MAX TEMP = 38°C	V_2 KCAS	131	131	131	131	131	131	131	131	131	131	131

CAUTION: DO NOT REDUCE TAKEOFF EPR BY MORE THAN .15 OR BELOW A MINIMUM VALUE OF 1.56.

NOTES:

HEADWIND:	Increase available field length 2% for each 5 knots (up to 40 knots).
TAILWIND:	Not permitted using this data at this pressure altitude.
UPHILL SLOPE:	Decrease available field length 20% for each 1% (up to 2%).
DOWNHILL SLOPE:	Not permitted using this data at this pressure altitude.
GROUND SPOILERS INOP:	Decrease available field length 800 feet.

Non-SP GIV Takeoff Planning: Flaps 20° - APA 8000 Feet

AFM APP. A

TAKEOFF PLANNING CHART

NON-SP GIV **AIRPORT PRESSURE ALTITUDE = 8,000 FEET** **TAKEOFF FLAP 20°**

73,200 LB MTOGW	OAT (°C)	34	30	25	20	15	10	5	0	-10	-20	-30
	OAT (°F)	93	86	77	68	59	50	41	32	14	-4	-22
	RATED EPR	1.66	1.68	1.70	1.71	1.72	1.73	1.74	1.75	1.75	1.75	1.75
-- 73,200 LB --												
V_{FS} = 177 KCAS	FLD LNGTH	******	******	******	******	******	******	******	******	******	******	7,960
V_{SE} = 184 KCAS	V_1 KCAS	******	******	******	******	******	******	******	******	******	******	148
V_{REF} = 159 KCAS	V_R KCAS	******	******	******	******	******	******	******	******	******	******	148
MAX TEMP = -23°C	V_2 KCAS	******	******	******	******	******	******	******	******	******	******	152
-- 72,000 LB --												
V_{FS} = 176 KCAS	FLD LNGTH	******	******	******	******	******	******	******	******	******	7,970	7,670
V_{SE} = 183 KCAS	V_1 KCAS	******	******	******	******	******	******	******	******	******	145	146
V_{REF} = 158 KCAS	V_R KCAS	******	******	******	******	******	******	******	******	******	147	147
MAX TEMP = -15°C	V_2 KCAS	******	******	******	******	******	******	******	******	******	151	151
-- 70,000 LB --												
V_{FS} = 173 KCAS	FLD LNGTH	******	******	******	******	******	******	******	8,130	7,770	7,490	7,220
V_{SE} = 180 KCAS	V_1 KCAS	******	******	******	******	******	******	******	143	143	143	143
V_{REF} = 156 KCAS	V_R KCAS	******	******	******	******	******	******	******	145	145	145	145
MAX TEMP = 0°C	V_2 KCAS	******	******	******	******	******	******	******	149	149	149	149
-- 68,000 LB --												
V_{FS} = 171 KCAS	FLD LNGTH	******	******	******	******	8,460	8,130	7,900	7,630	7,300	7,040	6,780
V_{SE} = 178 KCAS	V_1 KCAS	******	******	******	******	141	141	140	140	140	140	140
V_{REF} = 154 KCAS	V_R KCAS	******	******	******	******	143	143	143	143	143	143	143
MAX TEMP = 17°C	V_2 KCAS	******	******	******	******	147	147	147	147	147	147	147
-- 66,000 LB --												
V_{FS} = 168 KCAS	FLD LNGTH	******	9,230	8,610	8,250	7,920	7,620	7,410	7,150	6,850	6,600	6,360
V_{SE} = 175 KCAS	V_1 KCAS	******	141	139	139	138	138	137	137	137	137	137
V_{REF} = 151 KCAS	V_R KCAS	******	141	141	141	141	141	141	141	141	141	141
MAX TEMP = 33°C	V_2 KCAS	******	145	145	145	145	145	145	145	145	145	145
-- 64,000 LB --												
V_{FS} = 166 KCAS	FLD LNGTH	9,210	8,560	8,040	7,710	7,420	7,140	6,940	6,710	6,420	6,190	5,960
V_{SE} = 172 KCAS	V_1 KCAS	138	137	136	136	135	135	134	134	134	134	134
V_{REF} = 149 KCAS	V_R KCAS	139	139	139	139	139	138	138	138	138	138	138
MAX TEMP = 34°C	V_2 KCAS	143	143	143	143	143	143	143	143	143	143	143
-- 62,000 LB --												
V_{FS} = 163 KCAS	FLD LNGTH	8,460	7,960	7,510	7,210	6,940	6,680	6,510	6,290	6,030	5,810	5,600
V_{SE} = 169 KCAS	V_1 KCAS	136	135	133	133	132	132	131	131	131	131	131
V_{REF} = 147 KCAS	V_R KCAS	136	136	136	136	136	136	136	136	136	136	136
MAX TEMP = 34°C	V_2 KCAS	140	140	140	140	140	140	140	140	140	140	140
-- 60,000 LB --												
V_{FS} = 160 KCAS	FLD LNGTH	7,860	7,420	7,010	6,730	6,480	6,250	6,090	5,900	5,650	5,450	5,250
V_{SE} = 167 KCAS	V_1 KCAS	133	131	130	130	129	129	128	128	128	128	128
V_{REF} = 144 KCAS	V_R KCAS	134	134	134	134	134	134	134	134	133	133	133
MAX TEMP = 34°C	V_2 KCAS	138	138	138	138	138	138	138	138	138	138	138

CAUTION: DO NOT REDUCE TAKEOFF EPR BY MORE THAN .15 OR BELOW A MINIMUM VALUE OF 1.56.

NOTES:

HEADWIND:	Increase available field length 2% for each 5 knots (up to 40 knots).
TAILWIND:	Not permitted using this data at this pressure altitude.
UPHILL SLOPE:	Decrease available field length 20% for each 1% (up to 2%).
DOWNHILL SLOPE:	Not permitted using this data at this pressure altitude.
GROUND SPOILERS INOP:	Decrease available field length 800 feet.

Non-SP GIV Takeoff Planning: Flaps 20° - APA 8000 Feet, ctd…

AFM APP. A

TAKEOFF PLANNING CHART

NON-SP GIV **AIRPORT PRESSURE ALTITUDE = 8,000 FEET** **TAKEOFF FLAP 20°**

73,200 LB MTOGW	OAT (°C)	34	30	25	20	15	10	5	0	-10	-20	-30
	OAT (°F)	93	86	77	68	59	50	41	32	14	-4	-22
	RATED EPR	1.66	1.68	1.70	1.71	1.72	1.73	1.74	1.75	1.75	1.75	1.75
-- 58,000 LB --												
V_{FS} = 158 KCAS	FLD LNGTH	7,290	6,890	6,530	6,270	6,050	5,830	5,690	5,510	5,280	5,090	4,900
V_{SE} = 164 KCAS	V_1 KCAS	129	128	127	127	126	126	125	125	125	125	125
V_{REF} = 142 KCAS	V_R KCAS	132	132	132	131	131	131	131	131	131	131	131
MAX TEMP = 34°C	V_2 KCAS	136	136	136	136	136	136	136	136	136	136	136
-- 56,000 LB --												
V_{FS} = 155 KCAS	FLD LNGTH	6,750	6,390	6,070	5,840	5,640	5,440	5,300	5,140	4,920	4,750	4,580
V_{SE} = 161 KCAS	V_1 KCAS	126	125	124	124	123	122	122	122	122	122	122
V_{REF} = 139 KCAS	V_R KCAS	129	129	129	129	129	128	128	128	128	128	128
MAX TEMP = 34°C	V_2 KCAS	133	133	133	133	133	133	133	133	133	133	133
-- 54,000 LB --												
V_{FS} = 152 KCAS	FLD LNGTH	6,350	6,020	5,730	5,520	5,330	5,140	5,010	4,860	4,660	4,490	4,330
V_{SE} = 158 KCAS	V_1 KCAS	124	123	122	121	121	120	120	120	120	120	120
V_{REF} = 137 KCAS	V_R KCAS	128	128	127	127	127	127	126	126	126	126	126
MAX TEMP = 34°C	V_2 KCAS	132	132	132	132	132	132	132	132	132	132	132
-- 52,000 LB --												
V_{FS} = 149 KCAS	FLD LNGTH	6,070	5,770	5,490	5,290	5,110	4,930	4,810	4,660	4,470	4,310	4,150
V_{SE} = 155 KCAS	V_1 KCAS	123	122	121	120	120	119	119	119	119	119	119
V_{REF} = 134 KCAS	V_R KCAS	127	127	127	126	126	126	126	125	125	125	125
MAX TEMP = 34°C	V_2 KCAS	131	131	131	131	131	131	131	131	131	131	131
-- 50,000 LB --												
V_{FS} = 146 KCAS	FLD LNGTH	5,800	5,520	5,250	5,060	4,890	4,720	4,600	4,460	4,280	4,120	3,970
V_{SE} = 152 KCAS	V_1 KCAS	121	121	120	119	119	118	118	117	117	117	118
V_{REF} = 132 KCAS	V_R KCAS	127	126	126	125	125	125	125	125	124	124	124
MAX TEMP = 34°C	V_2 KCAS	131	131	131	131	131	131	131	131	131	131	131
-- 48,000 LB --												
V_{FS} = 143 KCAS	FLD LNGTH	5,570	5,300	5,050	4,870	4,700	4,540	4,430	4,290	4,120	3,970	3,830
V_{SE} = 149 KCAS	V_1 KCAS	121	120	119	118	118	117	117	117	117	117	117
V_{REF} = 129 KCAS	V_R KCAS	126	126	125	125	125	125	124	124	124	124	124
MAX TEMP = 34°C	V_2 KCAS	131	131	131	131	131	131	131	131	131	131	131
-- 46,000 LB --												
V_{FS} = 140 KCAS	FLD LNGTH	5,350	5,090	4,850	4,680	4,520	4,370	4,280	4,180	4,030	3,890	3,750
V_{SE} = 146 KCAS	V_1 KCAS	120	119	118	117	117	116	116	117	117	117	117
V_{REF} = 126 KCAS	V_R KCAS	126	125	125	125	124	124	124	124	124	124	124
MAX TEMP = 34°C	V_2 KCAS	131	131	131	131	131	131	131	131	131	131	131

CAUTION: DO NOT REDUCE TAKEOFF EPR BY MORE THAN .15 OR BELOW A MINIMUM VALUE OF 1.56.

NOTES:

HEADWIND:	Increase available field length 2% for each 5 knots (up to 40 knots).
TAILWIND:	Not permitted using this data at this pressure altitude.
UPHILL SLOPE:	Decrease available field length 20% for each 1% (up to 2%).
DOWNHILL SLOPE:	Not permitted using this data at this pressure altitude.
GROUND SPOILERS INOP:	Decrease available field length 800 feet.

Non-SP GIV Takeoff Planning Charts: Flaps 10°

AFM APP. A

The charts in this section provide quick reference planning data for takeoff planning at the following Airport Pressure Altitudes (APA), for 10° flap configurations:

- Sea Level
- 500 Feet
- 1000 Feet
- 2000 Feet
- 4000 Feet
- 6000 Feet
- 8000 Feet

In the interest of safety, the ***CAUTION*** and ***NOTES*** following each takeoff planning chart must be observed when using any takeoff planning chart in this section.

Non-SP GIV Takeoff Planning: Flaps 10° - APA Sea Level

AFM APP. A

TAKEOFF PLANNING CHART

NON-SP GIV **AIRPORT PRESSURE ALTITUDE = SEA LEVEL** **TAKEOFF FLAP 10°**

73,200 LB MTOGW	OAT (°C)	50	45	40	35	30	25	20	15	5	-5	-15
	OAT (°F)	122	113	104	95	86	77	68	59	41	23	5
	RATED EPR	1.59	1.62	1.64	1.67	1.70	1.70	1.70	1.70	1.69	1.69	1.69
-- 73,200 LB --												
V_{FS} = 171 KCAS	FLD LNGTH	******	7,280	6,780	6,330	5,940	5,850	5,750	5,660	5,520	5,340	5,150
V_{SE} = 178 KCAS	V_1 KCAS	******	147	145	144	142	142	142	142	143	143	143
V_{REF} = 157 KCAS	V_R KCAS	******	150	149	149	149	149	149	149	149	149	149
MAX TEMP = 48°C	V_2 KCAS	******	155	155	155	155	155	155	155	155	155	155
-- 72,000 LB --												
V_{FS} = 170 KCAS	FLD LNGTH	7,580	7,030	6,550	6,120	5,750	5,660	5,570	5,480	5,340	5,160	4,990
V_{SE} = 177 KCAS	V_1 KCAS	147	145	144	142	141	141	141	141	141	141	141
V_{REF} = 156 KCAS	V_R KCAS	149	149	148	148	147	147	147	147	147	147	147
MAX TEMP = 50°C	V_2 KCAS	154	154	154	154	154	154	154	154	154	154	154
-- 70,000 LB --												
V_{FS} = 167 KCAS	FLD LNGTH	7,140	6,630	6,190	5,790	5,440	5,350	5,270	5,180	5,060	4,890	4,720
V_{SE} = 174 KCAS	V_1 KCAS	144	143	141	139	138	138	138	138	138	138	139
V_{REF} = 154 KCAS	V_R KCAS	147	146	146	145	145	145	145	145	145	145	145
MAX TEMP = 50°C	V_2 KCAS	152	152	152	152	152	152	152	152	152	152	152
-- 68,000 LB --												
V_{FS} = 165 KCAS	FLD LNGTH	6,710	6,240	5,830	5,460	5,130	5,050	4,970	4,890	4,770	4,610	4,450
V_{SE} = 171 KCAS	V_1 KCAS	141	140	138	137	135	135	135	135	136	136	136
V_{REF} = 151 KCAS	V_R KCAS	144	144	143	143	143	143	143	143	143	143	143
MAX TEMP = 50°C	V_2 KCAS	149	149	149	149	149	149	149	149	149	149	149
-- 66,000 LB --												
V_{FS} = 162 KCAS	FLD LNGTH	6,310	5,870	5,490	5,140	4,840	4,760	4,690	4,610	4,500	4,350	4,200
V_{SE} = 169 KCAS	V_1 KCAS	138	137	135	134	132	132	132	132	133	133	133
V_{REF} = 149 KCAS	V_R KCAS	142	141	141	141	140	140	140	140	140	140	140
MAX TEMP = 50°C	V_2 KCAS	147	147	147	147	147	147	147	147	147	147	147
-- 64,000 LB --												
V_{FS} = 160 KCAS	FLD LNGTH	5,920	5,510	5,160	4,840	4,560	4,480	4,410	4,340	4,240	4,090	3,950
V_{SE} = 166 KCAS	V_1 KCAS	135	134	132	131	129	129	129	129	130	130	130
V_{REF} = 147 KCAS	V_R KCAS	139	139	139	138	138	138	138	138	138	138	138
MAX TEMP = 50°C	V_2 KCAS	145	145	145	145	145	145	145	145	145	145	145
-- 62,000 LB --												
V_{FS} = 157 KCAS	FLD LNGTH	5,550	5,180	4,850	4,550	4,290	4,220	4,150	4,090	3,990	3,850	3,720
V_{SE} = 164 KCAS	V_1 KCAS	132	131	129	128	126	126	126	126	127	127	127
V_{REF} = 144 KCAS	V_R KCAS	137	137	136	136	135	135	135	135	135	135	135
MAX TEMP = 50°C	V_2 KCAS	143	143	143	143	143	143	143	143	143	143	143
-- 60,000 LB --												
V_{FS} = 155 KCAS	FLD LNGTH	5,200	4,850	4,550	4,270	4,030	3,970	3,900	3,840	3,750	3,620	3,500
V_{SE} = 161 KCAS	V_1 KCAS	129	128	126	125	123	123	123	123	124	124	124
V_{REF} = 142 KCAS	V_R KCAS	135	134	134	133	133	133	133	133	133	133	133
MAX TEMP = 50°C	V_2 KCAS	140	140	140	140	140	140	140	140	140	140	140

CAUTION: DO NOT REDUCE TAKEOFF EPR BY MORE THAN .15 OR BELOW A MINIMUM VALUE OF 1.56.

NOTES:

HEADWIND: Increase available field length 2% for each 5 knots (up to 40 knots).
TAILWIND: Not permitted using this data at this pressure altitude.
UPHILL SLOPE: Decrease available field length 20% for each 1% (up to 2%).
DOWNHILL SLOPE: Not permitted using this data at this pressure altitude.

Non-SP GIV Takeoff Planning: Flaps 10° - APA Sea Level, ctd…

AFM APP. A

TAKEOFF PLANNING CHART

NON-SP GIV AIRPORT PRESSURE ALTITUDE = SEA LEVEL TAKEOFF FLAP 10°

73,200 LB MTOGW	OAT (°C)	50	45	40	35	30	25	20	15	5	-5	-15
	OAT (°F)	122	113	104	95	86	77	68	59	41	23	5
	RATED EPR	1.59	1.62	1.64	1.67	1.70	1.70	1.70	1.70	1.69	1.69	1.69
-- 58,000 LB --												
V_{FS} = 152 KCAS	FLD LNGTH	4,850	4,530	4,250	4,000	3,770	3,710	3,660	3,600	3,510	3,390	3,270
V_{SE} = 158 KCAS	V_1 KCAS	126	125	123	122	120	120	120	120	120	120	121
V_{REF} = 140 KCAS	V_R KCAS	132	132	131	131	130	130	130	130	130	130	130
MAX TEMP = 50°C	V_2 KCAS	138	138	138	138	138	138	138	138	138	138	138
-- 56,000 LB --												
V_{FS} = 150 KCAS	FLD LNGTH	4,520	4,230	3,970	3,740	3,570	3,520	3,470	3,410	3,320	3,210	3,100
V_{SE} = 156 KCAS	V_1 KCAS	123	121	120	118	118	118	118	118	118	118	118
V_{REF} = 137 KCAS	V_R KCAS	129	129	128	128	127	127	127	127	127	127	127
MAX TEMP = 50°C	V_2 KCAS	136	136	136	136	136	136	136	136	136	136	136
-- 54,000 LB --												
V_{FS} = 147 KCAS	FLD LNGTH	4,240	3,970	3,740	3,620	3,520	3,460	3,410	3,360	3,260	3,160	3,050
V_{SE} = 153 KCAS	V_1 KCAS	120	119	117	117	118	118	118	118	118	118	118
V_{REF} = 135 KCAS	V_R KCAS	127	127	126	126	125	125	125	125	125	125	125
MAX TEMP = 50°C	V_2 KCAS	134	134	134	134	134	134	134	134	134	134	134
-- 52,000 LB --												
V_{FS} = 144 KCAS	FLD LNGTH	4,010	3,780	3,660	3,560	3,460	3,410	3,360	3,310	3,210	3,110	3,010
V_{SE} = 150 KCAS	V_1 KCAS	118	117	117	118	118	118	118	118	118	119	119
V_{REF} = 132 KCAS	V_R KCAS	126	125	125	124	124	124	124	124	124	124	124
MAX TEMP = 50°C	V_2 KCAS	132	132	132	132	132	132	132	132	132	132	132
-- 50,000 LB --												
V_{FS} = 142 KCAS	FLD LNGTH	3,830	3,710	3,600	3,490	3,400	3,350	3,300	3,250	3,160	3,060	2,960
V_{SE} = 147 KCAS	V_1 KCAS	117	117	118	118	119	119	119	119	119	119	119
V_{REF} = 130 KCAS	V_R KCAS	124	124	123	123	122	122	122	122	122	122	122
MAX TEMP = 50°C	V_2 KCAS	131	131	131	131	131	131	131	131	131	131	131
-- 48,000 LB --												
V_{FS} = 139 KCAS	FLD LNGTH	3,760	3,640	3,530	3,430	3,340	3,290	3,250	3,200	3,100	3,010	2,910
V_{SE} = 144 KCAS	V_1 KCAS	117	117	118	118	119	119	119	119	119	119	119
V_{REF} = 127 KCAS	V_R KCAS	124	123	123	122	122	122	122	122	122	122	122
MAX TEMP = 50°C	V_2 KCAS	131	131	131	131	131	131	131	131	131	131	131
-- 46,000 LB --												
V_{FS} = 136 KCAS	FLD LNGTH	3,680	3,570	3,470	3,370	3,280	3,240	3,190	3,140	3,050	2,950	2,860
V_{SE} = 141 KCAS	V_1 KCAS	117	118	118	119	119	119	119	119	119	120	120
V_{REF} = 124 KCAS	V_R KCAS	124	123	123	122	121	121	121	121	121	121	121
MAX TEMP = 50°C	V_2 KCAS	131	131	131	131	131	131	131	131	131	131	131

CAUTION: DO NOT REDUCE TAKEOFF EPR BY MORE THAN .15 OR BELOW A MINIMUM VALUE OF 1.56.

NOTES:

HEADWIND: Increase available field length 2% for each 5 knots (up to 40 knots).
TAILWIND: Not permitted using this data at this pressure altitude.
UPHILL SLOPE: Decrease available field length 20% for each 1% (up to 2%).
DOWNHILL SLOPE: Not permitted using this data at this pressure altitude.

Non-SP GIV Takeoff Planning: Flaps 10° - APA 500 Feet

AFM APP. A

TAKEOFF PLANNING CHART

NON-SP GIV **AIRPORT PRESSURE ALTITUDE = 500 FEET** **TAKEOFF FLAP 10°**

73,200 LB MTOGW	OAT (°C)	49	45	40	35	30	25	20	15	5	-5	-15
	OAT (°F)	120	113	104	95	86	77	68	59	41	23	5
	RATED EPR	1.59	1.62	1.64	1.67	1.70	1.71	1.71	1.71	1.70	1.70	1.70
-- 73,200 LB --												
V_{FS} = 171 KCAS	FLD LNGTH	******	******	7,060	6,590	6,170	6,000	5,900	5,800	5,660	5,470	5,280
V_{SE} = 178 KCAS	V_1 KCAS	******	******	146	144	143	143	143	143	143	143	143
V_{REF} = 157 KCAS	V_R KCAS	******	******	150	149	149	149	149	149	149	149	149
MAX TEMP = 43°C	V_2 KCAS	******	******	155	155	155	155	155	155	155	155	155
-- 72,000 LB --												
V_{FS} = 170 KCAS	FLD LNGTH	7,780	7,320	6,820	6,370	5,970	5,800	5,700	5,610	5,480	5,290	5,110
V_{SE} = 177 KCAS	V_1 KCAS	147	146	144	143	141	141	141	141	141	141	141
V_{REF} = 156 KCAS	V_R KCAS	149	149	148	148	147	147	147	147	147	147	147
MAX TEMP = 49°C	V_2 KCAS	154	154	154	154	154	154	154	154	154	154	154
-- 70,000 LB --												
V_{FS} = 167 KCAS	FLD LNGTH	7,320	6,910	6,440	6,020	5,650	5,490	5,400	5,310	5,180	5,010	4,830
V_{SE} = 174 KCAS	V_1 KCAS	144	143	142	140	138	138	138	138	139	139	139
V_{REF} = 154 KCAS	V_R KCAS	147	146	146	146	145	145	145	145	145	145	145
MAX TEMP = 49°C	V_2 KCAS	152	152	152	152	152	152	152	152	152	152	152
-- 68,000 LB --												
V_{FS} = 165 KCAS	FLD LNGTH	6,880	6,500	6,060	5,670	5,330	5,180	5,090	5,010	4,890	4,720	4,560
V_{SE} = 172 KCAS	V_1 KCAS	141	140	139	137	136	135	135	135	136	136	136
V_{REF} = 151 KCAS	V_R KCAS	144	144	144	143	143	143	143	143	143	143	143
MAX TEMP = 49°C	V_2 KCAS	149	149	149	149	149	149	149	149	149	149	149
-- 66,000 LB --												
V_{FS} = 162 KCAS	FLD LNGTH	6,460	6,110	5,700	5,340	5,020	4,880	4,800	4,720	4,610	4,450	4,300
V_{SE} = 169 KCAS	V_1 KCAS	138	137	136	134	133	132	132	132	133	133	133
V_{REF} = 149 KCAS	V_R KCAS	142	142	141	141	140	140	140	140	140	140	140
MAX TEMP = 49°C	V_2 KCAS	147	147	147	147	147	147	147	147	147	147	147
-- 64,000 LB --												
V_{FS} = 160 KCAS	FLD LNGTH	6,060	5,730	5,360	5,030	4,730	4,600	4,520	4,450	4,340	4,190	4,050
V_{SE} = 166 KCAS	V_1 KCAS	136	134	133	131	130	129	129	129	130	130	130
V_{REF} = 147 KCAS	V_R KCAS	140	139	139	138	138	138	138	138	138	138	138
MAX TEMP = 49°C	V_2 KCAS	145	145	145	145	145	145	145	145	145	145	145
-- 62,000 LB --												
V_{FS} = 157 KCAS	FLD LNGTH	5,680	5,380	5,040	4,720	4,450	4,320	4,250	4,190	4,080	3,950	3,810
V_{SE} = 164 KCAS	V_1 KCAS	133	131	130	128	127	126	126	126	127	127	127
V_{REF} = 144 KCAS	V_R KCAS	137	137	136	136	135	135	135	135	135	135	135
MAX TEMP = 49°C	V_2 KCAS	143	143	143	143	143	143	143	143	143	143	143
-- 60,000 LB --												
V_{FS} = 155 KCAS	FLD LNGTH	5,320	5,040	4,720	4,440	4,180	4,060	4,000	3,930	3,840	3,710	3,580
V_{SE} = 161 KCAS	V_1 KCAS	130	128	127	125	124	123	123	123	124	124	124
V_{REF} = 142 KCAS	V_R KCAS	135	134	134	133	133	133	133	133	133	133	133
MAX TEMP = 49°C	V_2 KCAS	140	140	140	140	140	140	140	140	140	140	140

CAUTION: DO NOT REDUCE TAKEOFF EPR BY MORE THAN .15 OR BELOW A MINIMUM VALUE OF 1.56.

NOTES:

HEADWIND: Increase available field length 2% for each 5 knots (up to 40 knots).
TAILWIND: Not permitted using this data at this pressure altitude.
UPHILL SLOPE: Decrease available field length 20% for each 1% (up to 2%).
DOWNHILL SLOPE: Not permitted using this data at this pressure altitude.

Non-SP GIV Takeoff Planning: Flaps 10° - APA 500 Feet, ctd…

AFM APP. A

TAKEOFF PLANNING CHART

NON-SP GIV **AIRPORT PRESSURE ALTITUDE = 500 FEET** **TAKEOFF FLAP 10°**

73,200 LB MTOGW	OAT (°C)	49	45	40	35	30	25	20	15	5	-5	-15
	OAT (°F)	120	113	104	95	86	77	68	59	41	23	5
	RATED EPR	1.59	1.62	1.64	1.67	1.70	1.71	1.71	1.71	1.70	1.70	1.70
-- 58,000 LB --												
V_{FS} = 152 KCAS	FLD LNGTH	4,970	4,710	4,420	4,150	3,910	3,810	3,740	3,680	3,590	3,470	3,350
V_{SE} = 158 KCAS	V_1 KCAS	126	125	124	122	121	120	120	120	121	121	121
V_{REF} = 140 KCAS	V_R KCAS	132	132	131	131	130	130	130	130	130	130	130
MAX TEMP = 49°C	V_2 KCAS	138	138	138	138	138	138	138	138	138	138	138
-- 56,000 LB --												
V_{FS} = 150 KCAS	FLD LNGTH	4,630	4,390	4,120	3,880	3,670	3,590	3,530	3,480	3,380	3,270	3,160
V_{SE} = 156 KCAS	V_1 KCAS	123	122	120	119	118	118	118	118	118	118	118
V_{REF} = 137 KCAS	V_R KCAS	129	129	129	128	128	127	127	127	127	127	127
MAX TEMP = 49°C	V_2 KCAS	136	136	136	136	136	136	136	136	136	136	136
-- 54,000 LB --												
V_{FS} = 147 KCAS	FLD LNGTH	4,340	4,130	3,880	3,710	3,600	3,530	3,480	3,420	3,330	3,220	3,110
V_{SE} = 153 KCAS	V_1 KCAS	121	119	118	117	118	118	118	118	118	118	118
V_{REF} = 135 KCAS	V_R KCAS	127	127	126	126	125	125	125	125	125	125	125
MAX TEMP = 49°C	V_2 KCAS	134	134	134	134	134	134	134	134	134	134	134
-- 52,000 LB --												
V_{FS} = 144 KCAS	FLD LNGTH	4,110	3,900	3,750	3,640	3,540	3,470	3,420	3,370	3,270	3,170	3,060
V_{SE} = 150 KCAS	V_1 KCAS	118	117	117	118	118	118	118	118	118	118	119
V_{REF} = 132 KCAS	V_R KCAS	126	125	125	124	124	124	124	124	124	124	124
MAX TEMP = 49°C	V_2 KCAS	132	132	132	132	132	132	132	132	132	132	132
-- 50,000 LB --												
V_{FS} = 142 KCAS	FLD LNGTH	3,900	3,800	3,680	3,580	3,480	3,410	3,360	3,310	3,220	3,110	3,010
V_{SE} = 147 KCAS	V_1 KCAS	116	117	117	118	118	118	118	119	119	119	119
V_{REF} = 130 KCAS	V_R KCAS	124	124	123	123	122	122	122	122	122	122	122
MAX TEMP = 49°C	V_2 KCAS	131	131	131	131	131	131	131	131	131	131	131
-- 48,000 LB --												
V_{FS} = 139 KCAS	FLD LNGTH	3,820	3,730	3,620	3,510	3,420	3,360	3,310	3,260	3,160	3,060	2,960
V_{SE} = 144 KCAS	V_1 KCAS	117	117	118	118	118	119	119	119	119	119	119
V_{REF} = 127 KCAS	V_R KCAS	124	124	123	123	122	122	122	122	122	122	122
MAX TEMP = 49°C	V_2 KCAS	131	131	131	131	131	131	131	131	131	131	131
-- 46,000 LB --												
V_{FS} = 136 KCAS	FLD LNGTH	3,740	3,650	3,550	3,450	3,360	3,300	3,250	3,200	3,110	3,010	2,910
V_{SE} = 141 KCAS	V_1 KCAS	117	117	118	118	119	119	119	119	119	119	119
V_{REF} = 124 KCAS	V_R KCAS	124	123	123	122	122	122	122	122	122	122	122
MAX TEMP = 49°C	V_2 KCAS	131	131	131	131	131	131	131	131	131	131	131

CAUTION: DO NOT REDUCE TAKEOFF EPR BY MORE THAN .15 OR BELOW A MINIMUM VALUE OF 1.56.

NOTES:

HEADWIND: Increase available field length 2% for each 5 knots (up to 40 knots).

TAILWIND: Not permitted using this data at this pressure altitude.

UPHILL SLOPE: Decrease available field length 20% for each 1% (up to 2%).

DOWNHILL SLOPE: Not permitted using this data at this pressure altitude.

Non-SP GIV Takeoff Planning: Flaps 10° - APA 1000 Feet

AFM APP. A

TAKEOFF PLANNING CHART

NON-SP GIV | **AIRPORT PRESSURE ALTITUDE = 1,000 FEET** | **TAKEOFF FLAP 10°**

73,200 LB MTOGW	OAT (°C)	48	45	40	35	30	25	20	15	5	-5	-15
	OAT (°F)	118	113	104	95	86	77	68	59	41	23	5
	RATED EPR	1.60	1.62	1.64	1.66	1.70	1.71	1.71	1.71	1.71	1.71	1.71
-- 73,200 LB --												
V_{FS} = 171 KCAS	FLD LNGTH	******	******	******	6,850	6,420	6,160	6,040	5,950	5,800	5,610	5,410
V_{SE} = 178 KCAS	V_1 KCAS	******	******	******	145	144	143	143	143	143	143	143
V_{REF} = 157 KCAS	V_R KCAS	******	******	******	149	149	149	149	149	149	149	149
MAX TEMP = 37°C	V_2 KCAS	******	******	******	155	155	155	155	155	155	155	155
-- 72,000 LB --												
V_{FS} = 170 KCAS	FLD LNGTH	******	7,630	7,100	6,620	6,210	5,960	5,850	5,750	5,610	5,420	5,230
V_{SE} = 177 KCAS	V_1 KCAS	******	146	145	143	142	141	141	141	141	142	142
V_{REF} = 156 KCAS	V_R KCAS	******	149	148	148	148	147	147	147	147	147	147
MAX TEMP = 47°C	V_2 KCAS	******	154	154	154	154	154	154	154	154	154	154
-- 70,000 LB --												
V_{FS} = 167 KCAS	FLD LNGTH	7,510	7,190	6,700	6,260	5,870	5,640	5,530	5,440	5,310	5,130	4,950
V_{SE} = 174 KCAS	V_1 KCAS	144	144	142	141	139	138	138	138	139	139	139
V_{REF} = 154 KCAS	V_R KCAS	147	147	146	146	145	145	145	145	145	145	145
MAX TEMP = 48°C	V_2 KCAS	152	152	152	152	152	152	152	152	152	152	152
-- 68,000 LB --												
V_{FS} = 165 KCAS	FLD LNGTH	7,050	6,760	6,300	5,890	5,530	5,320	5,220	5,130	5,010	4,840	4,670
V_{SE} = 172 KCAS	V_1 KCAS	142	141	139	138	136	136	136	136	136	136	136
V_{REF} = 151 KCAS	V_R KCAS	144	144	144	143	143	143	143	143	143	143	143
MAX TEMP = 48°C	V_2 KCAS	149	149	149	149	149	149	149	149	149	149	149
-- 66,000 LB --												
V_{FS} = 162 KCAS	FLD LNGTH	6,620	6,350	5,930	5,550	5,210	5,010	4,920	4,840	4,720	4,560	4,400
V_{SE} = 169 KCAS	V_1 KCAS	139	138	136	135	133	133	133	133	133	133	133
V_{REF} = 149 KCAS	V_R KCAS	142	142	141	141	140	140	140	140	140	140	140
MAX TEMP = 48°C	V_2 KCAS	147	147	147	147	147	147	147	147	147	147	147
-- 64,000 LB --												
V_{FS} = 160 KCAS	FLD LNGTH	6,210	5,960	5,570	5,220	4,910	4,720	4,630	4,560	4,440	4,300	4,150
V_{SE} = 166 KCAS	V_1 KCAS	136	135	133	132	130	130	130	130	130	130	130
V_{REF} = 147 KCAS	V_R KCAS	140	139	139	138	138	138	138	138	138	138	138
MAX TEMP = 48°C	V_2 KCAS	145	145	145	145	145	145	145	145	145	145	145
-- 62,000 LB --												
V_{FS} = 157 KCAS	FLD LNGTH	5,820	5,590	5,230	4,910	4,610	4,440	4,360	4,290	4,180	4,040	3,900
V_{SE} = 164 KCAS	V_1 KCAS	133	132	130	129	127	127	127	127	127	127	127
V_{REF} = 144 KCAS	V_R KCAS	137	137	136	136	136	135	135	135	135	135	135
MAX TEMP = 48°C	V_2 KCAS	143	143	143	143	143	143	143	143	143	143	143
-- 60,000 LB --												
V_{FS} = 155 KCAS	FLD LNGTH	5,450	5,240	4,910	4,600	4,340	4,170	4,090	4,030	3,930	3,800	3,670
V_{SE} = 161 KCAS	V_1 KCAS	130	129	127	126	124	124	124	124	124	124	124
V_{REF} = 142 KCAS	V_R KCAS	135	134	134	134	133	133	133	133	133	133	133
MAX TEMP = 48°C	V_2 KCAS	140	140	140	140	140	140	140	140	140	140	140

CAUTION: DO NOT REDUCE TAKEOFF EPR BY MORE THAN .15 OR BELOW A MINIMUM VALUE OF 1.56.

NOTES:

HEADWIND: Increase available field length 2% for each 5 knots (up to 40 knots).
TAILWIND: Not permitted using this data at this pressure altitude.
UPHILL SLOPE: Decrease available field length 20% for each 1% (up to 2%).
DOWNHILL SLOPE: Not permitted using this data at this pressure altitude.

Non-SP GIV Takeoff Planning: Flaps 10° - APA 1000 Feet, ctd…

AFM APP. A

TAKEOFF PLANNING CHART

NON-SP GIV **AIRPORT PRESSURE ALTITUDE = 1,000 FEET** **TAKEOFF FLAP 10°**

73,200 LB MTOGW	OAT (°C)	48	45	40	35	30	25	20	15	5	-5	-15
	OAT (°F)	118	113	104	95	86	77	68	59	41	23	5
	RATED EPR	1.60	1.62	1.64	1.66	1.70	1.71	1.71	1.71	1.71	1.71	1.71
-- 58,000 LB --												
V_{FS} = 152 KCAS	FLD LNGTH	5,090	4,890	4,580	4,310	4,060	3,910	3,830	3,770	3,680	3,560	3,430
V_{SE} = 158 KCAS	V_1 KCAS	127	126	124	123	121	120	120	120	121	121	121
V_{REF} = 140 KCAS	V_R KCAS	132	132	131	131	130	130	130	130	130	130	130
MAX TEMP = 48°C	V_2 KCAS	138	138	138	138	138	138	138	138	138	138	138
-- 56,000 LB --												
V_{FS} = 150 KCAS	FLD LNGTH	4,740	4,560	4,280	4,020	3,790	3,660	3,600	3,550	3,450	3,330	3,220
V_{SE} = 156 KCAS	V_1 KCAS	123	122	121	120	118	117	118	118	118	118	118
V_{REF} = 137 KCAS	V_R KCAS	129	129	129	128	128	128	127	127	127	127	127
MAX TEMP = 48°C	V_2 KCAS	136	136	136	136	136	136	136	136	136	136	136
-- 54,000 LB --												
V_{FS} = 147 KCAS	FLD LNGTH	4,450	4,280	4,020	3,820	3,680	3,600	3,540	3,490	3,390	3,280	3,170
V_{SE} = 153 KCAS	V_1 KCAS	121	120	118	117	117	118	118	118	118	118	118
V_{REF} = 135 KCAS	V_R KCAS	127	127	127	126	126	125	125	125	125	125	125
MAX TEMP = 48°C	V_2 KCAS	134	134	134	134	134	134	134	134	134	134	134
-- 52,000 LB --												
V_{FS} = 144 KCAS	FLD LNGTH	4,210	4,050	3,860	3,730	3,620	3,540	3,490	3,430	3,330	3,230	3,120
V_{SE} = 150 KCAS	V_1 KCAS	119	118	117	117	118	118	118	118	118	118	119
V_{REF} = 132 KCAS	V_R KCAS	126	126	125	125	124	124	124	124	124	124	124
MAX TEMP = 48°C	V_2 KCAS	132	132	132	132	132	132	132	132	132	132	132
-- 50,000 LB --												
V_{FS} = 142 KCAS	FLD LNGTH	3,980	3,900	3,770	3,660	3,560	3,480	3,430	3,370	3,280	3,170	3,070
V_{SE} = 147 KCAS	V_1 KCAS	116	117	117	118	118	118	118	118	119	119	119
V_{REF} = 130 KCAS	V_R KCAS	124	124	124	123	123	122	122	122	122	122	122
MAX TEMP = 48°C	V_2 KCAS	131	131	131	131	131	131	131	131	131	131	131
-- 48,000 LB --												
V_{FS} = 139 KCAS	FLD LNGTH	3,890	3,820	3,700	3,590	3,500	3,420	3,370	3,320	3,220	3,120	3,020
V_{SE} = 144 KCAS	V_1 KCAS	117	117	117	118	118	119	119	119	119	119	119
V_{REF} = 127 KCAS	V_R KCAS	124	124	123	123	122	122	122	122	122	122	122
MAX TEMP = 48°C	V_2 KCAS	131	131	131	131	131	131	131	131	131	131	131
-- 46,000 LB --												
V_{FS} = 136 KCAS	FLD LNGTH	3,810	3,740	3,630	3,530	3,430	3,360	3,310	3,260	3,170	3,070	2,960
V_{SE} = 141 KCAS	V_1 KCAS	117	117	118	118	119	119	119	119	119	119	120
V_{REF} = 124 KCAS	V_R KCAS	124	124	123	122	122	122	122	122	122	122	122
MAX TEMP = 48°C	V_2 KCAS	131	131	131	131	131	131	131	131	131	131	131

CAUTION: DO NOT REDUCE TAKEOFF EPR BY MORE THAN .15 OR BELOW A MINIMUM VALUE OF 1.56.

NOTES:

HEADWIND:	Increase available field length 2% for each 5 knots (up to 40 knots).
TAILWIND:	Not permitted using this data at this pressure altitude.
UPHILL SLOPE:	Decrease available field length 20% for each 1% (up to 2%).
DOWNHILL SLOPE:	Not permitted using this data at this pressure altitude.

Non-SP GIV Takeoff Planning: Flaps 10°- APA 2000 Feet

AFM APP. A

TAKEOFF PLANNING CHART

NON-SP GIV **AIRPORT PRESSURE ALTITUDE = 2,000 FEET** **TAKEOFF FLAP 10°**

73,200 LB MTOGW	OAT (°C)	45	40	35	30	25	20	15	10	0	-10	-19
	OAT (°F)	113	104	95	86	77	68	59	50	32	14	-2
	RATED EPR	1.62	1.64	1.66	1.69	1.71	1.72	1.72	1.72	1.72	1.72	1.72
-- 73,200 LB --												
V_{FS} = 171 KCAS	FLD LNGTH	******	******	******	******	6,570	6,420	6,280	6,150	5,990	5,790	5,600
V_{SE} = 178 KCAS	V_1 KCAS	******	******	******	******	144	144	143	143	144	144	144
V_{REF} = 157 KCAS	V_R KCAS	******	******	******	******	149	149	149	149	149	149	149
MAX TEMP = 27°C	V_2 KCAS	******	******	******	******	155	155	155	155	155	155	155
-- 72,000 LB --												
V_{FS} = 170 KCAS	FLD LNGTH	******	******	7,170	6,710	6,360	6,210	6,070	5,940	5,800	5,600	5,420
V_{SE} = 177 KCAS	V_1 KCAS	******	******	145	143	142	142	142	142	142	142	142
V_{REF} = 156 KCAS	V_R KCAS	******	******	148	148	148	148	148	148	148	148	148
MAX TEMP = 36°C	V_2 KCAS	******	******	154	154	154	154	154	154	154	154	154
-- 70,000 LB --												
V_{FS} = 167 KCAS	FLD LNGTH	7,800	7,250	6,760	6,340	6,010	5,870	5,740	5,620	5,480	5,290	5,120
V_{SE} = 174 KCAS	V_1 KCAS	145	143	142	140	139	139	139	139	139	139	139
V_{REF} = 154 KCAS	V_R KCAS	147	147	146	146	145	145	145	145	145	145	145
MAX TEMP = 46°C	V_2 KCAS	152	152	152	152	152	152	152	152	152	152	152
-- 68,000 LB --												
V_{FS} = 165 KCAS	FLD LNGTH	7,330	6,820	6,370	5,970	5,670	5,540	5,410	5,300	5,170	4,990	4,830
V_{SE} = 172 KCAS	V_1 KCAS	142	140	139	137	136	136	136	136	136	136	136
V_{REF} = 151 KCAS	V_R KCAS	145	144	144	143	143	143	143	143	143	143	143
MAX TEMP = 46°C	V_2 KCAS	149	149	149	149	149	149	149	149	149	149	149
-- 66,000 LB --												
V_{FS} = 162 KCAS	FLD LNGTH	6,880	6,410	5,990	5,620	5,340	5,220	5,100	5,000	4,870	4,700	4,550
V_{SE} = 169 KCAS	V_1 KCAS	139	137	136	135	133	133	133	133	133	133	133
V_{REF} = 149 KCAS	V_R KCAS	142	142	141	141	141	140	140	140	140	140	140
MAX TEMP = 46°C	V_2 KCAS	147	147	147	147	147	147	147	147	147	147	147
-- 64,000 LB --												
V_{FS} = 160 KCAS	FLD LNGTH	6,450	6,020	5,630	5,290	5,030	4,910	4,800	4,700	4,590	4,430	4,290
V_{SE} = 166 KCAS	V_1 KCAS	136	134	133	132	130	130	130	130	130	130	131
V_{REF} = 147 KCAS	V_R KCAS	140	139	139	138	138	138	138	138	138	138	138
MAX TEMP = 46°C	V_2 KCAS	145	145	145	145	145	145	145	145	145	145	145
-- 62,000 LB --												
V_{FS} = 157 KCAS	FLD LNGTH	6,050	5,640	5,290	4,970	4,730	4,620	4,520	4,430	4,310	4,170	4,040
V_{SE} = 164 KCAS	V_1 KCAS	133	131	130	129	127	127	127	127	127	127	127
V_{REF} = 145 KCAS	V_R KCAS	137	137	136	136	136	136	135	135	135	135	135
MAX TEMP = 46°C	V_2 KCAS	143	143	143	143	143	143	143	143	143	143	143
-- 60,000 LB --												
V_{FS} = 155 KCAS	FLD LNGTH	5,660	5,290	4,960	4,670	4,440	4,340	4,250	4,160	4,050	3,920	3,790
V_{SE} = 161 KCAS	V_1 KCAS	130	128	127	126	125	124	124	124	124	124	125
V_{REF} = 142 KCAS	V_R KCAS	135	134	134	134	133	133	133	133	133	133	133
MAX TEMP = 46°C	V_2 KCAS	140	140	140	140	140	140	140	140	140	140	140

CAUTION: DO NOT REDUCE TAKEOFF EPR BY MORE THAN .15 OR BELOW A MINIMUM VALUE OF 1.56.

NOTES:

HEADWIND: Increase available field length 2% for each 5 knots (up to 40 knots).
TAILWIND: Not permitted using this data at this pressure altitude.
UPHILL SLOPE: Decrease available field length 20% for each 1% (up to 2%).
DOWNHILL SLOPE: Not permitted using this data at this pressure altitude.

Non-SP GIV Takeoff Planning: Flaps 10° - APA 2000 Feet, ctd…

AFM APP. A

TAKEOFF PLANNING CHART

NON-SP GIV **AIRPORT PRESSURE ALTITUDE = 2,000 FEET** **TAKEOFF FLAP 10°**

73,200 LB MTOGW	OAT (°C)	45	40	35	30	25	20	15	10	0	-10	-19
	OAT (°F)	113	104	95	86	77	68	59	50	32	14	-2
	RATED EPR	1.62	1.64	1.66	1.69	1.71	1.72	1.72	1.72	1.72	1.72	1.72
-- 58,000 LB --												
V_{FS} = 152 KCAS	FLD LNGTH	5,280	4,940	4,640	4,370	4,160	4,060	3,980	3,890	3,800	3,670	3,550
V_{SE} = 158 KCAS	V_1 KCAS	127	125	124	122	121	121	121	121	121	121	121
V_{REF} = 140 KCAS	V_R KCAS	132	132	131	131	130	130	130	130	130	130	130
MAX TEMP = 46°C	V_2 KCAS	138	138	138	138	138	138	138	138	138	138	138
-- 56,000 LB --												
V_{FS} = 150 KCAS	FLD LNGTH	4,920	4,610	4,330	4,080	3,880	3,800	3,720	3,640	3,550	3,430	3,320
V_{SE} = 156 KCAS	V_1 KCAS	124	122	121	119	118	118	118	118	118	118	118
V_{REF} = 137 KCAS	V_R KCAS	130	129	129	128	128	128	128	128	128	128	128
MAX TEMP = 46°C	V_2 KCAS	136	136	136	136	136	136	136	136	136	136	136
-- 54,000 LB --												
V_{FS} = 147 KCAS	FLD LNGTH	4,620	4,330	4,070	3,870	3,760	3,700	3,630	3,570	3,470	3,350	3,250
V_{SE} = 153 KCAS	V_1 KCAS	121	119	118	117	117	117	118	118	118	118	118
V_{REF} = 135 KCAS	V_R KCAS	127	127	127	126	126	126	126	126	126	126	126
MAX TEMP = 46°C	V_2 KCAS	134	134	134	134	134	134	134	134	134	134	134
-- 52,000 LB --												
V_{FS} = 144 KCAS	FLD LNGTH	4,370	4,100	3,910	3,800	3,700	3,630	3,570	3,510	3,410	3,300	3,200
V_{SE} = 150 KCAS	V_1 KCAS	119	117	117	117	118	118	118	118	118	118	118
V_{REF} = 132 KCAS	V_R KCAS	126	125	125	125	124	124	124	124	124	124	124
MAX TEMP = 46°C	V_2 KCAS	132	132	132	132	132	132	132	132	132	132	132
-- 50,000 LB --												
V_{FS} = 142 KCAS	FLD LNGTH	4,140	3,960	3,840	3,730	3,630	3,570	3,510	3,450	3,350	3,240	3,140
V_{SE} = 147 KCAS	V_1 KCAS	117	117	117	118	118	118	118	118	118	118	118
V_{REF} = 130 KCAS	V_R KCAS	124	124	123	123	123	122	122	122	122	122	122
MAX TEMP = 46°C	V_2 KCAS	131	131	131	131	131	131	131	131	131	131	131
-- 48,000 LB --												
V_{FS} = 139 KCAS	FLD LNGTH	4,010	3,890	3,770	3,660	3,570	3,510	3,450	3,390	3,290	3,190	3,090
V_{SE} = 144 KCAS	V_1 KCAS	117	117	117	118	118	118	118	119	119	119	119
V_{REF} = 127 KCAS	V_R KCAS	124	124	123	123	122	122	122	122	122	122	122
MAX TEMP = 46°C	V_2 KCAS	131	131	131	131	131	131	131	131	131	131	131
-- 46,000 LB --												
V_{FS} = 136 KCAS	FLD LNGTH	3,930	3,810	3,690	3,590	3,500	3,440	3,390	3,330	3,230	3,130	3,040
V_{SE} = 141 KCAS	V_1 KCAS	117	117	118	118	118	119	119	119	119	119	119
V_{REF} = 124 KCAS	V_R KCAS	124	123	123	122	122	122	122	122	122	122	122
MAX TEMP = 46°C	V_2 KCAS	131	131	131	131	131	131	131	131	131	131	131

CAUTION: DO NOT REDUCE TAKEOFF EPR BY MORE THAN .15 OR BELOW A MINIMUM VALUE OF 1.56.

NOTES:

HEADWIND:	Increase available field length 2% for each 5 knots (up to 40 knots).
TAILWIND:	Not permitted using this data at this pressure altitude.
UPHILL SLOPE:	Decrease available field length 20% for each 1% (up to 2%).
DOWNHILL SLOPE:	Not permitted using this data at this pressure altitude.

Non-SP GIV Takeoff Planning: Flaps 10° - APA 4000 Feet

AFM APP. A

TAKEOFF PLANNING CHART

NON-SP GIV **AIRPORT PRESSURE ALTITUDE = 4,000 FEET** **TAKEOFF FLAP 10°**

73,200 LB MTOGW	OAT (°C)	40	35	30	25	20	15	10	5	-5	-15	-23
	OAT (°F)	104	95	86	77	68	59	50	41	23	5	-9
	RATED EPR	1.63	1.66	1.69	1.71	1.72	1.74	1.74	1.74	1.74	1.74	1.74
-- 73,200 LB --												
V_{FS} = 173 KCAS	FLD LNGTH	******	******	******	******	******	******	******	******	6,630	6,400	6,220
V_{SE} = 180 KCAS	V_1 KCAS	******	******	******	******	******	******	******	******	146	146	146
V_{REF} = 157 KCAS	V_R KCAS	******	******	******	******	******	******	******	******	150	150	150
MAX TEMP = 2°C	V_2 KCAS	******	******	******	******	******	******	******	******	156	156	156
-- 72,000 LB --												
V_{FS} = 171 KCAS	FLD LNGTH	******	******	******	******	******	******	6,780	6,670	6,410	6,190	6,010
V_{SE} = 178 KCAS	V_1 KCAS	******	******	******	******	******	******	144	144	144	144	144
V_{REF} = 156 KCAS	V_R KCAS	******	******	******	******	******	******	149	149	149	149	149
MAX TEMP = 11°C	V_2 KCAS	******	******	******	******	******	******	155	155	155	155	155
-- 70,000 LB --												
V_{FS} = 169 KCAS	FLD LNGTH	******	******	******	7,130	6,850	6,610	6,400	6,300	6,060	5,850	5,680
V_{SE} = 176 KCAS	V_1 KCAS	******	******	******	143	142	141	141	141	141	141	141
V_{REF} = 154 KCAS	V_R KCAS	******	******	******	147	147	147	147	147	147	147	147
MAX TEMP = 27°C	V_2 KCAS	******	******	******	153	153	153	153	153	153	153	153
-- 68,000 LB --												
V_{FS} = 166 KCAS	FLD LNGTH	8,150	7,580	7,090	6,710	6,450	6,230	6,040	5,940	5,720	5,520	5,360
V_{SE} = 173 KCAS	V_1 KCAS	144	142	141	140	139	139	138	138	138	138	138
V_{REF} = 151 KCAS	V_R KCAS	146	146	145	145	145	144	144	144	144	144	144
MAX TEMP = 42°C	V_2 KCAS	151	151	151	151	151	151	151	151	151	151	151
-- 66,000 LB --												
V_{FS} = 164 KCAS	FLD LNGTH	7,650	7,130	6,670	6,320	6,080	5,870	5,690	5,590	5,390	5,200	5,050
V_{SE} = 171 KCAS	V_1 KCAS	141	139	138	137	136	136	135	135	135	135	135
V_{REF} = 149 KCAS	V_R KCAS	143	143	143	142	142	142	142	142	142	142	142
MAX TEMP = 42°C	V_2 KCAS	148	148	148	148	148	148	148	148	148	148	148
-- 64,000 LB --												
V_{FS} = 161 KCAS	FLD LNGTH	7,170	6,690	6,270	5,940	5,720	5,520	5,350	5,270	5,070	4,890	4,750
V_{SE} = 168 KCAS	V_1 KCAS	138	136	135	134	133	133	132	132	132	132	132
V_{REF} = 147 KCAS	V_R KCAS	141	141	140	140	140	140	139	139	139	139	139
MAX TEMP = 42°C	V_2 KCAS	146	146	146	146	146	146	146	146	146	146	146
-- 62,000 LB --												
V_{FS} = 159 KCAS	FLD LNGTH	6,710	6,270	5,880	5,580	5,370	5,190	5,030	4,950	4,770	4,600	4,470
V_{SE} = 165 KCAS	V_1 KCAS	135	133	132	131	130	130	129	129	129	129	130
V_{REF} = 145 KCAS	V_R KCAS	139	138	138	137	137	137	137	137	137	137	137
MAX TEMP = 42°C	V_2 KCAS	144	144	144	144	144	144	144	144	144	144	144
-- 60,000 LB --												
V_{FS} = 156 KCAS	FLD LNGTH	6,280	5,880	5,520	5,240	5,040	4,870	4,730	4,650	4,480	4,320	4,200
V_{SE} = 163 KCAS	V_1 KCAS	132	130	129	128	127	127	126	126	126	126	127
V_{REF} = 142 KCAS	V_R KCAS	136	136	135	135	135	135	134	134	134	134	134
MAX TEMP = 42°C	V_2 KCAS	142	142	142	142	142	142	142	142	142	142	142

CAUTION: DO NOT REDUCE TAKEOFF EPR BY MORE THAN .15 OR BELOW A MINIMUM VALUE OF 1.56.

NOTES:

HEADWIND:	Increase available field length 2% for each 5 knots (up to 40 knots).
TAILWIND:	Not permitted using this data at this pressure altitude.
UPHILL SLOPE:	Decrease available field length 20% for each 1% (up to 2%).
DOWNHILL SLOPE:	Not permitted using this data at this pressure altitude.

Non-SP GIV Takeoff Planning: Flaps 10° - APA 4000 Feet, ctd…

AFM APP. A

TAKEOFF PLANNING CHART

NON-SP GIV **AIRPORT PRESSURE ALTITUDE = 4,000 FEET** **TAKEOFF FLAP 10°**

73,200 LB MTOGW	OAT (°C)	40	35	30	25	20	15	10	5	-5	-15	-23
	OAT (°F)	104	95	86	77	68	59	50	41	23	5	-9
	RATED EPR	1.63	1.66	1.69	1.71	1.72	1.74	1.74	1.74	1.74	1.74	1.74
-- 58,000 LB --												
V_{FS} = 154 KCAS	FLD LNGTH	5,860	5,480	5,150	4,890	4,710	4,560	4,420	4,350	4,190	4,040	3,930
V_{SE} = 160 KCAS	V_1 KCAS	129	127	126	125	124	124	123	123	123	123	123
V_{REF} = 140 KCAS	V_R KCAS	134	133	133	132	132	132	132	132	132	132	132
MAX TEMP = 42°C	V_2 KCAS	139	139	139	139	139	139	139	139	139	139	139
-- 56,000 LB --												
V_{FS} = 151 KCAS	FLD LNGTH	5,450	5,110	4,810	4,570	4,400	4,260	4,130	4,060	3,910	3,780	3,670
V_{SE} = 157 KCAS	V_1 KCAS	125	124	123	121	121	120	120	120	120	120	120
V_{REF} = 137 KCAS	V_R KCAS	131	130	130	130	129	129	129	129	129	129	129
MAX TEMP = 42°C	V_2 KCAS	137	137	137	137	137	137	137	137	137	137	137
-- 54,000 LB --												
V_{FS} = 148 KCAS	FLD LNGTH	5,100	4,780	4,500	4,280	4,130	3,990	3,880	3,820	3,690	3,570	3,470
V_{SE} = 154 KCAS	V_1 KCAS	123	121	120	119	118	117	117	117	117	117	118
V_{REF} = 135 KCAS	V_R KCAS	129	128	128	127	127	127	127	127	127	127	127
MAX TEMP = 42°C	V_2 KCAS	134	134	134	134	134	134	134	134	134	134	134
-- 52,000 LB --												
V_{FS} = 146 KCAS	FLD LNGTH	4,790	4,500	4,240	4,070	3,980	3,890	3,810	3,750	3,630	3,510	3,410
V_{SE} = 151 KCAS	V_1 KCAS	120	119	117	117	117	117	117	117	118	118	118
V_{REF} = 132 KCAS	V_R KCAS	127	126	126	125	125	125	125	125	125	125	125
MAX TEMP = 42°C	V_2 KCAS	133	133	133	133	133	133	133	133	133	133	133
-- 50,000 LB --												
V_{FS} = 143 KCAS	FLD LNGTH	4,490	4,260	4,110	4,000	3,910	3,820	3,750	3,690	3,560	3,440	3,350
V_{SE} = 148 KCAS	V_1 KCAS	117	117	117	117	117	117	118	118	118	118	118
V_{REF} = 130 KCAS	V_R KCAS	125	124	124	123	123	123	123	123	123	123	123
MAX TEMP = 42°C	V_2 KCAS	131	131	131	131	131	131	131	131	131	131	131
-- 48,000 LB --												
V_{FS} = 140 KCAS	FLD LNGTH	4,340	4,160	4,030	3,920	3,830	3,750	3,680	3,620	3,500	3,380	3,290
V_{SE} = 145 KCAS	V_1 KCAS	117	117	117	117	118	118	118	118	118	118	118
V_{REF} = 127 KCAS	V_R KCAS	124	124	123	123	123	123	122	122	122	122	122
MAX TEMP = 42°C	V_2 KCAS	131	131	131	131	131	131	131	131	131	131	131
-- 46,000 LB --												
V_{FS} = 137 KCAS	FLD LNGTH	4,200	4,070	3,950	3,840	3,760	3,680	3,610	3,550	3,430	3,320	3,230
V_{SE} = 142 KCAS	V_1 KCAS	116	117	117	118	118	118	118	118	118	119	119
V_{REF} = 124 KCAS	V_R KCAS	124	124	123	123	123	122	122	122	122	122	122
MAX TEMP = 42°C	V_2 KCAS	131	131	131	131	131	131	131	131	131	131	131

CAUTION: DO NOT REDUCE TAKEOFF EPR BY MORE THAN .15 OR BELOW A MINIMUM VALUE OF 1.56.

NOTES:

HEADWIND:	Increase available field length 2% for each 5 knots (up to 40 knots).
TAILWIND:	Not permitted using this data at this pressure altitude.
UPHILL SLOPE:	Decrease available field length 20% for each 1% (up to 2%).
DOWNHILL SLOPE:	Not permitted using this data at this pressure altitude.

Non-SP GIV Takeoff Planning: Flaps 10° - APA 6000 Feet

AFM APP. A

TAKEOFF PLANNING CHART

NON-SP GIV **AIRPORT PRESSURE ALTITUDE = 6,000 FEET** **TAKEOFF FLAP 10°**

73,200 LB MTOGW	OAT (°C)	38	35	30	25	20	15	10	5	-5	-15	-25
	OAT (°F)	101	95	86	77	68	59	50	41	23	5	-13
	RATED EPR	1.64	1.65	1.68	1.71	1.72	1.73	1.74	1.74	1.75	1.75	1.75
-- 73,200 LB --												
V_{FS} = 175 KCAS	FLD LNGTH	******	******	******	******	******	******	******	******	******	******	7,300
V_{SE} = 182 KCAS	V_1 KCAS	******	******	******	******	******	******	******	******	******	******	149
V_{REF} = 158 KCAS	V_R KCAS	******	******	******	******	******	******	******	******	******	******	153
MAX TEMP = -24°C	V_2 KCAS	******	******	******	******	******	******	******	******	******	******	158
-- 72,000 LB --												
V_{FS} = 174 KCAS	FLD LNGTH	******	******	******	******	******	******	******	******	******	7,320	7,050
V_{SE} = 181 KCAS	V_1 KCAS	******	******	******	******	******	******	******	******	******	148	148
V_{REF} = 157 KCAS	V_R KCAS	******	******	******	******	******	******	******	******	******	151	151
MAX TEMP = -15°C	V_2 KCAS	******	******	******	******	******	******	******	******	******	157	157
-- 70,000 LB --												
V_{FS} = 171 KCAS	FLD LNGTH	******	******	******	******	******	******	******	******	7,160	6,910	6,650
V_{SE} = 178 KCAS	V_1 KCAS	******	******	******	******	******	******	******	******	145	145	145
V_{REF} = 154 KCAS	V_R KCAS	******	******	******	******	******	******	******	******	149	149	149
MAX TEMP = 0°C	V_2 KCAS	******	******	******	******	******	******	******	******	155	155	155
-- 68,000 LB --												
V_{FS} = 169 KCAS	FLD LNGTH	******	******	******	******	******	7,480	7,220	7,050	6,740	6,500	6,270
V_{SE} = 175 KCAS	V_1 KCAS	******	******	******	******	******	143	142	142	142	142	142
V_{REF} = 152 KCAS	V_R KCAS	******	******	******	******	******	147	147	147	146	146	146
MAX TEMP = 16°C	V_2 KCAS	******	******	******	******	******	152	152	152	152	152	152
-- 66,000 LB --												
V_{FS} = 166 KCAS	FLD LNGTH	******	******	8,020	7,590	7,290	7,030	6,790	6,640	6,340	6,120	5,900
V_{SE} = 173 KCAS	V_1 KCAS	******	******	142	141	140	140	139	139	139	139	139
V_{REF} = 150 KCAS	V_R KCAS	******	******	145	145	144	144	144	144	144	144	144
MAX TEMP = 33°C	V_2 KCAS	******	******	150	150	150	150	150	150	150	150	150
-- 64,000 LB --												
V_{FS} = 163 KCAS	FLD LNGTH	8,400	8,050	7,520	7,130	6,850	6,610	6,380	6,240	5,970	5,760	5,550
V_{SE} = 170 KCAS	V_1 KCAS	141	140	139	138	137	137	136	136	136	136	136
V_{REF} = 148 KCAS	V_R KCAS	143	143	142	142	142	142	142	142	142	142	142
MAX TEMP = 38°C	V_2 KCAS	148	148	148	148	148	148	148	148	148	148	148
-- 62,000 LB --												
V_{FS} = 161 KCAS	FLD LNGTH	7,860	7,530	7,050	6,680	6,420	6,200	5,990	5,860	5,600	5,410	5,210
V_{SE} = 167 KCAS	V_1 KCAS	138	137	136	135	134	134	133	133	133	133	133
V_{REF} = 145 KCAS	V_R KCAS	141	140	140	140	140	139	139	139	139	139	139
MAX TEMP = 38°C	V_2 KCAS	145	145	145	145	145	145	145	145	145	145	145
-- 60,000 LB --												
V_{FS} = 158 KCAS	FLD LNGTH	7,340	7,040	6,600	6,260	6,020	5,820	5,620	5,500	5,260	5,070	4,890
V_{SE} = 165 KCAS	V_1 KCAS	135	134	133	132	131	131	130	130	130	130	130
V_{REF} = 143 KCAS	V_R KCAS	138	138	138	137	137	137	137	137	137	137	137
MAX TEMP = 38°C	V_2 KCAS	143	143	143	143	143	143	143	143	143	143	143

CAUTION: DO NOT REDUCE TAKEOFF EPR BY MORE THAN .15 OR BELOW A MINIMUM VALUE OF 1.56.

NOTES:

HEADWIND: Increase available field length 2% for each 5 knots (up to 40 knots).
TAILWIND: Not permitted using this data at this pressure altitude.
UPHILL SLOPE: Decrease available field length 20% for each 1% (up to 2%).
DOWNHILL SLOPE: Not permitted using this data at this pressure altitude.

Non-SP GIV Takeoff Planning: Flaps 10° - APA 6000 Feet, ctd…

AFM APP. A

TAKEOFF PLANNING CHART

NON-SP GIV **AIRPORT PRESSURE ALTITUDE = 6,000 FEET** **TAKEOFF FLAP 10°**

73,200 LB MTOGW	OAT (°C)	38	35	30	25	20	15	10	5	-5	-15	-25
	OAT (°F)	101	95	86	77	68	59	50	41	23	5	-13
	RATED EPR	1.64	1.65	1.68	1.71	1.72	1.73	1.74	1.74	1.75	1.75	1.75
-- 58,000 LB --												
V_{FS} = 156 KCAS	FLD LNGTH	6,840	6,560	6,150	5,840	5,620	5,430	5,250	5,140	4,910	4,740	4,570
V_{SE} = 162 KCAS	V_1 KCAS	132	131	130	129	128	127	127	127	127	127	127
V_{REF} = 140 KCAS	V_R KCAS	135	135	135	135	134	134	134	134	134	134	134
MAX TEMP = 38°C	V_2 KCAS	141	141	141	141	141	141	141	141	141	141	141
-- 56,000 LB --												
V_{FS} = 153 KCAS	FLD LNGTH	6,360	6,110	5,730	5,450	5,240	5,070	4,900	4,790	4,590	4,430	4,270
V_{SE} = 159 KCAS	V_1 KCAS	128	128	126	125	125	124	124	124	123	123	123
V_{REF} = 138 KCAS	V_R KCAS	133	133	132	132	132	131	131	131	131	131	131
MAX TEMP = 38°C	V_2 KCAS	138	138	138	138	138	138	138	138	138	138	138
-- 54,000 LB --												
V_{FS} = 150 KCAS	FLD LNGTH	5,910	5,680	5,340	5,080	4,890	4,730	4,570	4,470	4,280	4,130	3,980
V_{SE} = 156 KCAS	V_1 KCAS	125	124	123	122	122	121	120	120	120	120	120
V_{REF} = 135 KCAS	V_R KCAS	130	130	130	129	129	129	129	129	128	128	128
MAX TEMP = 38°C	V_2 KCAS	136	136	136	136	136	136	136	136	136	136	136
-- 52,000 LB --												
V_{FS} = 147 KCAS	FLD LNGTH	5,500	5,290	4,970	4,730	4,560	4,410	4,270	4,170	4,000	3,860	3,720
V_{SE} = 153 KCAS	V_1 KCAS	122	121	120	119	118	118	117	117	117	117	117
V_{REF} = 133 KCAS	V_R KCAS	128	127	127	127	126	126	126	126	126	126	126
MAX TEMP = 38°C	V_2 KCAS	133	133	133	133	133	133	133	133	133	133	133
-- 50,000 LB --												
V_{FS} = 145 KCAS	FLD LNGTH	5,100	4,910	4,620	4,430	4,320	4,230	4,130	4,060	3,910	3,780	3,650
V_{SE} = 150 KCAS	V_1 KCAS	119	118	117	116	116	117	117	117	117	117	117
V_{REF} = 130 KCAS	V_R KCAS	125	125	124	124	124	124	124	123	123	123	123
MAX TEMP = 38°C	V_2 KCAS	131	131	131	131	131	131	131	131	131	131	131
-- 48,000 LB --												
V_{FS} = 141 KCAS	FLD LNGTH	4,910	4,720	4,480	4,340	4,230	4,140	4,050	3,980	3,840	3,710	3,580
V_{SE} = 147 KCAS	V_1 KCAS	118	117	116	116	117	117	117	117	117	117	118
V_{REF} = 128 KCAS	V_R KCAS	125	125	124	124	124	123	123	123	123	123	123
MAX TEMP = 38°C	V_2 KCAS	131	131	131	131	131	131	131	131	131	131	131
-- 46,000 LB --												
V_{FS} = 138 KCAS	FLD LNGTH	4,710	4,550	4,360	4,240	4,140	4,060	3,970	3,900	3,760	3,630	3,510
V_{SE} = 144 KCAS	V_1 KCAS	117	117	116	117	117	117	117	117	118	118	118
V_{REF} = 125 KCAS	V_R KCAS	125	124	124	124	123	123	123	123	123	123	123
MAX TEMP = 38°C	V_2 KCAS	131	131	131	131	131	131	131	131	131	131	131

CAUTION: DO NOT REDUCE TAKEOFF EPR BY MORE THAN .15 OR BELOW A MINIMUM VALUE OF 1.56.

NOTES:

HEADWIND:	Increase available field length 2% for each 5 knots (up to 40 knots).
TAILWIND:	Not permitted using this data at this pressure altitude.
UPHILL SLOPE:	Decrease available field length 20% for each 1% (up to 2%).
DOWNHILL SLOPE:	Not permitted using this data at this pressure altitude.

Non-SP GIV Takeoff Planning:
Flaps 10° - APA 8000 Feet

AFM APP. A

TAKEOFF PLANNING CHART

NON-SP GIV **AIRPORT PRESSURE ALTITUDE = 8,000 FEET** **TAKEOFF FLAP 10°**

73,200 LB MTOGW	OAT (°C)	34	30	25	20	15	10	5	0	-10	-20	-30
	OAT (°F)	93	86	77	68	59	50	41	32	14	-4	-22
	RATED EPR	1.66	1.68	1.70	1.71	1.72	1.73	1.74	1.75	1.75	1.75	1.75
-- 70,000 LB --												
V_{FS} = 173 KCAS	FLD LNGTH	******	******	******	******	******	******	******	******	******	******	7,750
V_{SE} = 180 KCAS	V_1 KCAS	******	******	******	******	******	******	******	******	******	******	148
V_{REF} = 156 KCAS	V_R KCAS	******	******	******	******	******	******	******	******	******	******	151
MAX TEMP = -25°C	V_2 KCAS	******	******	******	******	******	******	******	******	******	******	156
-- 68,000 LB --												
V_{FS} = 171 KCAS	FLD LNGTH	******	******	******	******	******	******	******	******	7,850	7,570	7,290
V_{SE} = 178 KCAS	V_1 KCAS	******	******	******	******	******	******	******	******	145	145	145
V_{REF} = 154 KCAS	V_R KCAS	******	******	******	******	******	******	******	******	149	149	149
MAX TEMP = -10°C	V_2 KCAS	******	******	******	******	******	******	******	******	154	154	154
-- 66,000 LB --												
V_{FS} = 168 KCAS	FLD LNGTH	******	******	******	******	******	******	7,970	7,710	7,380	7,110	6,850
V_{SE} = 175 KCAS	V_1 KCAS	******	******	******	******	******	******	143	142	142	142	142
V_{REF} = 151 KCAS	V_R KCAS	******	******	******	******	******	******	146	146	146	146	146
MAX TEMP = 6°C	V_2 KCAS	******	******	******	******	******	******	152	152	152	152	152
-- 64,000 LB --												
V_{FS} = 166 KCAS	FLD LNGTH	******	******	******	8,280	7,980	7,680	7,480	7,240	6,930	6,680	6,430
V_{SE} = 172 KCAS	V_1 KCAS	******	******	******	141	141	140	140	139	139	139	139
V_{REF} = 149 KCAS	V_R KCAS	******	******	******	144	144	144	144	144	144	144	144
MAX TEMP = 24°C	V_2 KCAS	******	******	******	149	149	149	149	149	149	149	149
-- 62,000 LB --												
V_{FS} = 163 KCAS	FLD LNGTH	9,010	8,520	8,070	7,760	7,480	7,200	7,020	6,790	6,500	6,270	6,040
V_{SE} = 169 KCAS	V_1 KCAS	141	140	139	138	138	137	137	136	136	136	136
V_{REF} = 147 KCAS	V_R KCAS	143	142	142	142	142	142	141	141	141	141	141
MAX TEMP = 34°C	V_2 KCAS	147	147	147	147	147	147	147	147	147	147	147
-- 60,000 LB --												
V_{FS} = 160 KCAS	FLD LNGTH	8,410	7,970	7,550	7,260	7,000	6,750	6,570	6,360	6,090	5,870	5,660
V_{SE} = 167 KCAS	V_1 KCAS	138	137	136	135	135	134	134	133	133	133	133
V_{REF} = 144 KCAS	V_R KCAS	140	140	140	139	139	139	139	139	139	139	139
MAX TEMP = 34°C	V_2 KCAS	145	145	145	145	145	145	145	145	145	145	145
-- 58,000 LB --												
V_{FS} = 158 KCAS	FLD LNGTH	7,820	7,410	7,030	6,770	6,530	6,290	6,130	5,940	5,690	5,480	5,280
V_{SE} = 164 KCAS	V_1 KCAS	134	133	132	132	131	131	131	130	130	130	130
V_{REF} = 142 KCAS	V_R KCAS	137	137	137	137	136	136	136	136	136	136	136
MAX TEMP = 34°C	V_2 KCAS	142	142	142	142	142	142	142	142	142	142	142
-- 56,000 LB --												
V_{FS} = 155 KCAS	FLD LNGTH	7,260	6,890	6,550	6,300	6,080	5,870	5,720	5,540	5,300	5,110	4,930
V_{SE} = 161 KCAS	V_1 KCAS	131	130	129	129	128	128	127	127	127	127	127
V_{REF} = 139 KCAS	V_R KCAS	135	134	134	134	134	134	133	133	133	133	133
MAX TEMP = 34°C	V_2 KCAS	140	140	140	140	140	140	140	140	140	140	140

CAUTION: DO NOT REDUCE TAKEOFF EPR BY MORE THAN .15 OR BELOW A MINIMUM VALUE OF 1.56.

NOTES:

HEADWIND: Increase available field length 2% for each 5 knots (up to 40 knots).

TAILWIND: Not permitted using this data at this pressure altitude.

UPHILL SLOPE: Decrease available field length 20% for each 1% (up to 2%).

DOWNHILL SLOPE: Not permitted using this data at this pressure altitude.

Non-SP GIV Takeoff Planning: Flaps 10° - APA 8000 Feet, ctd…

AFM APP. A

TAKEOFF PLANNING CHART

NON-SP GIV **AIRPORT PRESSURE ALTITUDE = 8,000 FEET** **TAKEOFF FLAP 10°**

73,200 LB MTOGW	OAT (°C)	34	30	25	20	15	10	5	0	-10	-20	-30
	OAT (°F)	93	86	77	68	59	50	41	32	14	-4	-22
	RATED EPR	1.66	1.68	1.70	1.71	1.72	1.73	1.74	1.75	1.75	1.75	1.75
-- 54,000 LB --												
V_{FS} = 152 KCAS	FLD LNGTH	6,740	6,400	6,080	5,860	5,660	5,460	5,320	5,150	4,940	4,760	4,590
V_{SE} = 158 KCAS	V_1 KCAS	128	127	126	125	125	124	124	124	123	124	124
V_{REF} = 137 KCAS	V_R KCAS	132	132	131	131	131	131	131	131	130	130	130
MAX TEMP = 34°C	V_2 KCAS	137	137	137	137	137	137	137	137	137	137	137
-- 52,000 LB --												
V_{FS} = 149 KCAS	FLD LNGTH	6,250	5,940	5,650	5,440	5,260	5,070	4,950	4,790	4,590	4,430	4,270
V_{SE} = 155 KCAS	V_1 KCAS	125	124	123	122	121	121	121	120	120	120	120
V_{REF} = 134 KCAS	V_R KCAS	129	129	129	128	128	128	128	128	128	128	128
MAX TEMP = 34°C	V_2 KCAS	135	135	135	135	135	135	135	135	135	135	135
-- 50,000 LB --												
V_{FS} = 146 KCAS	FLD LNGTH	5,780	5,500	5,240	5,050	4,880	4,710	4,590	4,450	4,270	4,110	3,960
V_{SE} = 152 KCAS	V_1 KCAS	121	120	119	119	118	118	117	117	117	117	117
V_{REF} = 132 KCAS	V_R KCAS	127	126	126	126	126	125	125	125	125	125	125
MAX TEMP = 34°C	V_2 KCAS	132	132	132	132	132	132	132	132	132	132	132
-- 48,000 LB --												
V_{FS} = 143 KCAS	FLD LNGTH	5,520	5,250	5,000	4,820	4,660	4,500	4,410	4,310	4,150	4,010	3,870
V_{SE} = 149 KCAS	V_1 KCAS	120	119	118	117	117	116	116	117	117	117	117
V_{REF} = 129 KCAS	V_R KCAS	126	126	125	125	125	125	125	124	124	124	124
MAX TEMP = 34°C	V_2 KCAS	132	132	132	132	132	132	132	132	132	132	132
-- 46,000 LB --												
V_{FS} = 140 KCAS	FLD LNGTH	5,260	5,010	4,770	4,610	4,500	4,400	4,310	4,220	4,070	3,930	3,790
V_{SE} = 146 KCAS	V_1 KCAS	119	118	117	116	116	117	117	117	117	117	117
V_{REF} = 126 KCAS	V_R KCAS	125	125	125	124	124	124	124	124	124	124	124
MAX TEMP = 34°C	V_2 KCAS	131	131	131	131	131	131	131	131	131	131	131

CAUTION: DO NOT REDUCE TAKEOFF EPR BY MORE THAN .15 OR BELOW A MINIMUM VALUE OF 1.56.

NOTES:

HEADWIND: Increase available field length 2% for each 5 knots (up to 40 knots).
TAILWIND: Not permitted using this data at this pressure altitude.
UPHILL SLOPE: Decrease available field length 20% for each 1% (up to 2%).
DOWNHILL SLOPE: Not permitted using this data at this pressure altitude.

Non-SP GIV Takeoff Climb Requirements: Climb Limited Weights: Flaps 20° - Minimum Gradient AFM 5.3

Conditions:

- For FAA Climb Requirements
- Based on 10 minutes of Maximum Takeoff Thrust in the event of an engine failure
- Cowl anti-ice ON below 10° C

Ambient Temp: °C	Takeoff Limited Weight (Pounds) For Airport Pressure Altitudes As Shown					
	Sea Level	2000 Feet	4000 Feet	6000 Feet	8000 Feet	10000 Feet
-10 & Below	73200	73200	73200	73200	73200	71900
-5	73200	73200	73200	73200	73200	71300
0	73200	73200	73200	73200	73200	70600
5	73200	73200	73200	73200	73200	69300
10	73200	73200	73200	73200	73200	68500
15	73200	73200	73200	73200	73200	67100
20	73200	73200	73200	73200	71700	65700
25	73200	73200	73200	73200	70200	64300
30	73200	73200	73200	73200	67700	62600
35	73200	73200	73200	70100	-	-
40	73200	73200	72000	-	-	-
45	73200	73200	-	-	-	-
50	73200	-	-	-	-	-

Non-SP GIV Takeoff Climb Requirements: Climb Limited Weights: Flaps 10° - Minimum Gradient AFM 5.3

Conditions:

- For FAA Climb Requirements
- Based on 10 minutes of Maximum Takeoff Thrust in the event of an engine failure
- Cowl anti-ice ON below 10° C

Ambient Temp: °C	Takeoff Limited Weight (Pounds) For Airport Pressure Altitudes As Shown					
	Sea Level	2000 Feet	4000 Feet	6000 Feet	8000 Feet	10000 Feet
0 & Below	73200	73200	73200	73200	73200	73200
5	73200	73200	73200	73200	73200	73200
10	73200	73200	73200	73200	73200	72200
15	73200	73200	73200	73200	73200	70600
20	73200	73200	73200	73200	73200	69000
25	73200	73200	73200	73200	73200	67500
30	73200	73200	73200	73200	71200	65500
35	73200	73200	73200	73200	-	-
40	73200	73200	73200	-	-	-
45	73200	73200	-	-	-	-
50	73200	-	-	-	-	-

Non-SP GIV Takeoff Climb Requirements: Climb Limited Weights: Flaps 20° - Standard Instrument Departure

GIV-OIS-7

NOTE: For complete text and examples, see **GIV Operating Manual Section 11-04-40 or Operational Information Supplement number GIV-OIS-07: Standard Instrument Departure (SID) Climb Performance.**

GIV TAKEOFF GROSS WEIGHT LIMITED BY REQUIRED SID CLIMB GRADIENT

1000 FT AGL, FLAPS 20, ONE ENGINE OPERATING

DELTA ISA TEMP (DEG C)	AIRPORT AMBIENT TEMP (DEG C)	AIRPORT PRESS ALTITUDE (FT)	TAKEOFF GROSS WEIGHT (1000 LB)							
			REQUIRED SID CLIMB GRADIENT (FT/NM)							
			200	300	400	500	600	700	800	900
≤ -5	≤ -20	15,000	54.6	47.8	NA	NA	NA	NA	NA	NA
	≤ -18	14,000	56.6	49.6	NA	NA	NA	NA	NA	NA
	≤ -14	12,000	60.9	53.3	47.4	NA	NA	NA	NA	NA
	≤ -10	10,000	65.3	57.2	51.0	45.8	NA	NA	NA	NA
	≤ -6	8,000	69.9	61.3	54.6	49.2	NA	NA	NA	NA
	≤ -2	6,000	74.6	65.5	58.3	52.6	47.9	NA	NA	NA
	≤ 2	4,000	74.6	70.0	62.3	56.2	51.2	47.0	NA	NA
	≤ 6	2,000	74.6	73.0	65.0	58.5	53.4	49.1	45.3	NA
	≤ 10	0	74.6	74.6	67.4	60.6	55.2	50.8	46.9	NA
0	-15	15,000	54.1	47.4	NA	NA	NA	NA	NA	NA
	-13	14,000	56.2	49.2	NA	NA	NA	NA	NA	NA
	-9	12,000	60.4	52.9	47.0	NA	NA	NA	NA	NA
	-5	10,000	64.8	56.7	50.6	45.5	NA	NA	NA	NA
	-1	8,000	69.5	60.9	54.2	48.9	NA	NA	NA	NA
	3	6,000	74.3	65.1	58.0	52.3	47.6	NA	NA	NA
	7	4,000	74.6	69.6	61.9	55.8	50.9	46.7	NA	NA
	11	2,000	74.6	73.6	65.5	59.0	53.8	49.4	45.6	NA
	15	0	74.6	74.6	67.4	60.6	55.2	50.8	46.9	NA
5	-10	15,000	53.7	47.0	NA	NA	NA	NA	NA	NA
	-8	14,000	55.7	48.8	NA	NA	NA	NA	NA	NA
	-4	12,000	59.8	52.4	46.6	NA	NA	NA	NA	NA
	0	10,000	64.0	56.1	50.0	NA	NA	NA	NA	NA
	4	8,000	68.5	60.1	53.5	48.2	NA	NA	NA	NA
	8	6,000	73.4	64.3	57.2	51.7	47.0	NA	NA	NA
	12	4,000	74.6	69.5	61.8	55.7	50.8	46.6	NA	NA
	16	2,000	74.6	72.8	64.8	58.4	53.2	48.9	45.2	NA
	20	0	74.6	74.6	67.3	60.6	55.2	50.8	46.9	NA
10	-5	15,000	52.8	46.1	NA	NA	NA	NA	NA	NA
	-3	14,000	54.7	47.9	NA	NA	NA	NA	NA	NA
	1	12,000	58.6	51.4	45.6	NA	NA	NA	NA	NA
	5	10,000	62.7	55.0	49.0	NA	NA	NA	NA	NA
	9	8,000	67.2	58.9	52.5	47.3	NA	NA	NA	NA
	13	6,000	72.6	63.7	56.7	51.2	46.5	NA	NA	NA
	17	4,000	74.6	68.2	60.7	54.8	50.0	45.8	NA	NA
	21	2,000	74.6	72.1	64.2	57.8	52.7	48.4	NA	NA
	25	0	74.6	74.6	67.3	60.6	55.2	50.8	46.9	NA

NOTES:

1. Maximum climb weights are limited by the design MAX TOGW of 74,600 lb for the GIV-SP and 73,200 for the GIV.
2. Increase MAX TOGW by 300 lb for each 10 knots of headwind up to a maximum of 40 knots. Data not valid for tailwinds.
3. Cowl anti-ice bleeds are assumed ON for temperatures below 10° C; wing anti-ice bleeds prohibited.

Non-SP GIV Climb Limited Weights, Flaps 20°, Standard Instrument Departure, ctd… GIV-OIS-7

GIV TAKEOFF GROSS WEIGHT LIMITED BY REQUIRED SID CLIMB GRADIENT

1000 FT AGL, FLAPS 20, ONE ENGINE OPERATING, ctd…

DELTA ISA TEMP (DEG C)	AIRPORT AMBIENT TEMP (DEG C)	AIRPORT PRESS ALTITUDE (FT)	TAKEOFF GROSS WEIGHT (1000 LB)							
			REQUIRED SID CLIMB GRADIENT (FT/NM)							
			200	300	400	500	600	700	800	900
15	0	15,000	51.6	45.0	NA	NA	NA	NA	NA	NA
	2	14,000	53.5	46.8	NA	NA	NA	NA	NA	NA
	6	12,000	57.4	50.3	NA	NA	NA	NA	NA	NA
	10	10,000	61.9	54.3	48.3	NA	NA	NA	NA	NA
	14	8,000	66.4	58.2	51.9	46.7	NA	NA	NA	NA
	18	6,000	71.3	62.5	55.7	50.3	45.7	NA	NA	NA
	22	4,000	74.6	67.0	59.6	53.8	49.1	NA	NA	NA
	26	2,000	74.6	71.4	63.5	57.2	52.2	48.0	NA	NA
	30	0	74.6	74.6	66.9	60.2	54.8	50.4	46.6	NA
20	5	15,000	50.5	NA	NA	NA	NA	NA	NA	NA
	7	14,000	52.3	45.7	NA	NA	NA	NA	NA	NA
	11	12,000	56.6	49.6	NA	NA	NA	NA	NA	NA
	15	10,000	60.7	53.2	47.3	NA	NA	NA	NA	NA
	19	8,000	65.1	57.1	50.9	45.8	NA	NA	NA	NA
	23	6,000	69.9	61.3	54.6	49.3	NA	NA	NA	NA
	27	4,000	74.6	65.5	58.3	52.7	48.0	NA	NA	NA
	31	2,000	74.6	68.7	61.2	55.2	50.4	46.2	NA	NA
	35	0	74.6	71.7	63.9	57.6	52.5	48.2	NA	NA
25	10	15,000	49.7	NA	NA	NA	NA	NA	NA	NA
	12	14,000	51.6	NA	NA	NA	NA	NA	NA	NA
	16	12,000	55.3	48.5	NA	NA	NA	NA	NA	NA
	20	10,000	59.4	52.1	46.3	NA	NA	NA	NA	NA
	24	8,000	63.7	55.9	49.9	NA	NA	NA	NA	NA
	28	6,000	68.4	60.0	53.5	48.3	NA	NA	NA	NA
	32	4,000	71.6	62.8	56.0	50.6	46.0	NA	NA	NA
	36	2,000	74.6	65.5	58.4	52.8	48.1	NA	NA	NA
	40	0	74.6	68.2	60.8	54.9	50.1	45.9	NA	NA
30	15	15,000	48.5	NA	NA	NA	NA	NA	NA	NA
	17	14,000	50.4	NA	NA	NA	NA	NA	NA	NA
	21	12,000	54.2	47.4	NA	NA	NA	NA	NA	NA
	25	10,000	58.1	51.0	45.2	NA	NA	NA	NA	NA
	29	8,000	62.0	54.4	48.5	NA	NA	NA	NA	NA
	33	6,000	65.3	57.3	51.1	46.0	NA	NA	NA	NA
	37	4,000	68.2	59.9	53.5	48.2	NA	NA	NA	NA
	41	2,000	71.0	62.3	55.6	50.2	45.6	NA	NA	NA
	45	0	73.8	64.8	57.8	52.3	47.6	NA	NA	NA

NOTES:

1. Maximum climb weights are limited by the design MAX TOGW of 74,600 lb for the GIV-SP and 73,200 for the GIV.
2. Increase MAX TOGW by 300 lb for each 10 knots of headwind up to a maximum of 40 knots. Data not valid for tailwinds.
3. Cowl anti-ice bleeds are assumed ON for temperatures below 10° C; wing anti-ice bleeds prohibited.

Non-SP GIV Climb Limited Weights, Flaps 20°, Standard Instrument Departure, ctd… GIV-OIS-7

GIV TAKEOFF GROSS WEIGHT LIMITED BY REQUIRED SID CLIMB GRADIENT

2000 FT AGL, FLAPS 20, ONE ENGINE OPERATING

DELTA ISA TEMP (DEG C)	AIRPORT AMBIENT TEMP (DEG C)	AIRPORT PRESS ALTITUDE (FT)	TAKEOFF GROSS WEIGHT (1000 LB) REQUIRED SID CLIMB GRADIENT (FT/NM)							
			200	300	400	500	600	700	800	900
	≤ -20	15,000	53.7	47.1	NA	NA	NA	NA	NA	NA
	≤ -18	14,000	55.7	48.9	NA	NA	NA	NA	NA	NA
	≤ -14	12,000	59.9	52.7	46.9	NA	NA	NA	NA	NA
	≤ -10	10,000	64.3	56.5	50.5	45.5	NA	NA	NA	NA
≤ -5	≤ -6	8,000	68.8	60.5	54.0	48.8	NA	NA	NA	NA
	≤ -2	6,000	73.6	64.7	57.8	52.2	47.6	NA	NA	NA
	≤ 2	4,000	74.6	69.2	61.7	55.8	51.0	46.8	NA	NA
	≤ 6	2,000	74.6	72.8	65.0	58.5	53.4	49.1	45.3	NA
	≤ 10	0	74.6	74.6	67.4	60.6	55.2	50.8	46.9	NA
	-15	15,000	53.2	46.7	NA	NA	NA	NA	NA	NA
	-13	14,000	55.2	48.5	NA	NA	NA	NA	NA	NA
	-9	12,000	59.4	52.2	46.5	NA	NA	NA	NA	NA
	-5	10,000	63.8	56.1	50.1	45.1	NA	NA	NA	NA
0	-1	8,000	68.4	60.1	53.7	48.5	NA	NA	NA	NA
	3	6,000	73.2	64.3	57.4	52.0	47.4	NA	NA	NA
	7	4,000	74.6	68.8	61.4	55.4	50.7	46.5	NA	NA
	11	2,000	74.6	73.2	65.3	58.9	53.8	49.4	45.6	NA
	15	0	74.6	74.6	67.4	60.6	55.2	50.8	46.9	NA
	-10	15,000	52.6	46.1	NA	NA	NA	NA	NA	NA
	-8	14,000	54.8	48.1	NA	NA	NA	NA	NA	NA
	-4	12,000	58.9	51.7	46.1	NA	NA	NA	NA	NA
	0	10,000	63.1	55.4	49.5	NA	NA	NA	NA	NA
5	4	8,000	67.5	59.3	53.0	47.9	NA	NA	NA	NA
	8	6,000	72.2	63.5	56.7	51.3	46.7	NA	NA	NA
	12	4,000	74.6	68.6	61.2	55.3	50.5	46.4	NA	NA
	16	2,000	74.6	72.5	64.7	58.4	53.2	48.9	45.2	NA
	20	0	74.6	74.6	67.2	60.6	55.2	50.8	46.9	NA
	-5	15,000	51.5	45.1	NA	NA	NA	NA	NA	NA
	-3	14,000	53.8	47.2	NA	NA	NA	NA	NA	NA
	1	12,000	57.7	50.7	45.1	NA	NA	NA	NA	NA
	5	10,000	61.8	54.3	48.5	NA	NA	NA	NA	NA
10	9	8,000	66.1	58.2	52.0	46.9	NA	NA	NA	NA
	13	6,000	71.5	62.9	56.1	50.8	46.3	NA	NA	NA
	17	4,000	74.6	67.4	60.1	54.4	49.7	45.6	NA	NA
	21	2,000	74.6	71.6	63.8	57.7	52.7	48.4	NA	NA
	25	0	74.6	74.6	66.9	60.4	55.1	50.8	46.9	NA

NOTES:

1. Maximum climb weights are limited by the design MAX TOGW of 74,600 lb for the GIV-SP and 73,200 for the GIV.
2. Increase MAX TOGW by 300 lb for each 10 knots of headwind up to a maximum of 40 knots. Data not valid for tailwinds.
3. Cowl anti-ice bleeds are assumed ON for temperatures below 10° C; wing anti-ice bleeds prohibited.

Non-SP GIV Climb Limited Weights, Flaps 20°, Standard Instrument Departure, ctd… GIV-OIS-7

GIV TAKEOFF GROSS WEIGHT LIMITED BY REQUIRED SID CLIMB GRADIENT

2000 FT AGL, FLAPS 20, ONE ENGINE OPERATING, ctd…

DELTA ISA TEMP (DEG C)	AIRPORT AMBIENT TEMP (DEG C)	AIRPORT PRESS ALTITUDE (FT)	TAKEOFF GROSS WEIGHT (1000 LB)							
			REQUIRED SID CLIMB GRADIENT (FT/NM)							
			200	300	400	500	600	700	800	900
15	0	15,000	50.2	NA	NA	NA	NA	NA	NA	NA
	2	14,000	52.6	46.1	NA	NA	NA	NA	NA	NA
	6	12,000	56.5	49.6	NA	NA	NA	NA	NA	NA
	10	10,000	61.0	53.6	47.9	NA	NA	NA	NA	NA
	14	8,000	65.4	57.5	51.4	46.3	NA	NA	NA	NA
	18	6,000	70.1	61.7	55.1	49.9	45.4	NA	NA	NA
	22	4,000	74.6	66.1	59.0	53.4	48.8	NA	NA	NA
	26	2,000	74.6	70.6	63.0	56.9	52.0	47.8	NA	NA
	30	0	74.6	74.6	66.6	60.1	54.8	50.4	46.6	NA
20	5	15,000	48.7	NA	NA	NA	NA	NA	NA	NA
	7	14,000	51.5	45.0	NA	NA	NA	NA	NA	NA
	11	12,000	55.7	48.9	NA	NA	NA	NA	NA	NA
	15	10,000	59.7	52.5	46.8	NA	NA	NA	NA	NA
	19	8,000	64.0	56.4	50.4	45.4	NA	NA	NA	NA
	23	6,000	68.8	60.5	54.1	48.9	NA	NA	NA	NA
	27	4,000	73.5	64.7	57.8	52.3	47.7	NA	NA	NA
	31	2,000	74.6	68.2	60.9	55.1	50.4	46.2	NA	NA
	35	0	74.6	71.3	63.7	57.5	52.5	48.2	NA	NA
25	10	15,000	47.9	NA	NA	NA	NA	NA	NA	NA
	12	14,000	50.7	NA	NA	NA	NA	NA	NA	NA
	16	12,000	54.5	47.8	NA	NA	NA	NA	NA	NA
	20	10,000	58.5	51.4	45.8	NA	NA	NA	NA	NA
	24	8,000	62.7	55.2	49.3	NA	NA	NA	NA	NA
	28	6,000	67.2	59.2	52.9	47.8	NA	NA	NA	NA
	32	4,000	70.9	62.4	55.8	50.5	46.0	NA	NA	NA
	36	2,000	74.0	65.2	58.2	52.7	48.1	NA	NA	NA
	40	0	74.6	67.9	60.6	54.8	50.1	45.9	NA	NA
30	15	15,000	46.4	NA	NA	NA	NA	NA	NA	NA
	17	14,000	49.5	NA	NA	NA	NA	NA	NA	NA
	21	12,000	53.3	46.7	NA	NA	NA	NA	NA	NA
	25	10,000	57.2	50.3	NA	NA	NA	NA	NA	NA
	29	8,000	61.2	53.9	48.1	NA	NA	NA	NA	NA
	33	6,000	64.6	56.9	50.9	45.9	NA	NA	NA	NA
	37	4,000	67.6	59.5	53.3	48.1	NA	NA	NA	NA
	41	2,000	70.4	62.0	55.5	50.2	45.6	NA	NA	NA
	45	0	73.2	64.5	57.7	52.3	47.6	NA	NA	NA

NOTES:
1. Maximum climb weights are limited by the design MAX TOGW of 74,600 lb for the GIV-SP and 73,200 for the GIV.
2. Increase MAX TOGW by 300 lb for each 10 knots of headwind up to a maximum of 40 knots. Data not valid for tailwinds.
3. Cowl anti-ice bleeds are assumed ON for temperatures below 10° C; wing anti-ice bleeds prohibited.

Non-SP GIV Climb Limited Weights, Flaps 20°, Standard Instrument Departure, ctd… GIV-OIS-7

GIV TAKEOFF GROSS WEIGHT LIMITED BY REQUIRED SID CLIMB GRADIENT

3000 FT AGL, FLAPS 20, ONE ENGINE OPERATING

DELTA ISA TEMP (DEG C)	AIRPORT AMBIENT TEMP (DEG C)	AIRPORT PRESS ALTITUDE (FT)	TAKEOFF GROSS WEIGHT (1000 LB)							
			REQUIRED SID CLIMB GRADIENT (FT/NM)							
			200	300	400	500	600	700	800	900
	≤ -20	15,000	52.7	46.3	NA	NA	NA	NA	NA	NA
	≤ -18	14,000	54.7	48.1	NA	NA	NA	NA	NA	NA
	≤ -14	12,000	58.9	51.8	46.2	NA	NA	NA	NA	NA
	≤ -10	10,000	63.2	55.6	49.7	NA	NA	NA	NA	NA
≤ -5	≤ -6	8,000	67.7	59.6	53.3	48.1	NA	NA	NA	NA
	≤ -2	6,000	72.4	63.8	57.0	51.6	47.0	NA	NA	NA
	≤ 2	4,000	74.6	68.1	60.9	55.0	50.3	46.2	NA	NA
	≤ 6	2,000	74.6	71.7	64.1	57.9	52.9	48.7	45.0	NA
	≤ 10	0	74.6	74.6	67.0	60.5	55.2	50.8	46.9	NA
	-15	15,000	52.3	45.8	NA	NA	NA	NA	NA	NA
	-13	14,000	54.3	47.7	NA	NA	NA	NA	NA	NA
	-9	12,000	58.4	51.4	45.8	NA	NA	NA	NA	NA
	-5	10,000	62.7	55.2	49.3	NA	NA	NA	NA	NA
0	-1	8,000	67.2	59.1	52.9	47.8	NA	NA	NA	NA
	3	6,000	72.0	63.3	56.6	51.3	46.7	NA	NA	NA
	7	4,000	74.6	67.7	60.5	54.7	50.0	45.9	NA	NA
	11	2,000	74.6	72.1	64.4	58.2	53.2	48.9	45.2	NA
	15	0	74.6	74.6	67.0	60.5	55.2	50.8	46.9	NA
	-10	15,000	51.5	45.2	NA	NA	NA	NA	NA	NA
	-8	14,000	53.7	47.1	NA	NA	NA	NA	NA	NA
	-4	12,000	57.8	50.9	45.3	NA	NA	NA	NA	NA
	0	10,000	62.0	54.6	48.8	NA	NA	NA	NA	NA
5	4	8,000	66.3	58.4	52.2	47.2	NA	NA	NA	NA
	8	6,000	71.1	62.6	55.9	50.6	46.1	NA	NA	NA
	12	4,000	74.6	67.5	60.3	54.6	49.9	45.8	NA	NA
	16	2,000	74.6	71.4	63.8	57.6	52.7	48.5	NA	NA
	20	0	74.6	74.6	66.6	60.1	54.9	50.6	46.8	NA
	-5	15,000	50.2	NA	NA	NA	NA	NA	NA	NA
	-3	14,000	52.5	46.0	NA	NA	NA	NA	NA	NA
	1	12,000	56.7	49.9	NA	NA	NA	NA	NA	NA
	5	10,000	60.8	53.5	47.8	NA	NA	NA	NA	NA
10	9	8,000	65.0	57.3	51.2	46.2	NA	NA	NA	NA
	13	6,000	70.3	61.9	55.3	50.1	45.6	NA	NA	NA
	17	4,000	74.6	66.3	59.2	53.6	49.0	NA	NA	NA
	21	2,000	74.6	70.5	63.0	56.9	52.0	47.9	NA	NA
	25	0	74.6	74.1	66.2	59.8	54.6	50.3	46.6	NA

NOTES:

1. Maximum climb weights are limited by the design MAX TOGW of 74,600 lb for the GIV-SP and 73,200 for the GIV.
2. Increase MAX TOGW by 300 lb for each 10 knots of headwind up to a maximum of 40 knots. Data not valid for tailwinds.
3. Cowl anti-ice bleeds are assumed ON for temperatures below 10° C; wing anti-ice bleeds prohibited.

Non-SP GIV Climb Limited Weights, Flaps 20°, Standard Instrument Departure, ctd… GIV-OIS-7

GIV TAKEOFF GROSS WEIGHT LIMITED BY REQUIRED SID CLIMB GRADIENT

3000 FT AGL, FLAPS 20, ONE ENGINE OPERATING, ctd…

DELTA ISA TEMP (DEG C)	AIRPORT AMBIENT TEMP (DEG C)	AIRPORT PRESS ALTITUDE (FT)	TAKEOFF GROSS WEIGHT (1000 LB) REQUIRED SID CLIMB GRADIENT (FT/NM) 200	300	400	500	600	700	800	900
15	0	15,000	48.6	NA	NA	NA	NA	NA	NA	NA
	2	14,000	51.1	NA	NA	NA	NA	NA	NA	NA
	6	12,000	55.5	48.9	NA	NA	NA	NA	NA	NA
	10	10,000	60.0	52.8	47.1	NA	NA	NA	NA	NA
	14	8,000	64.3	56.6	50.6	45.7	NA	NA	NA	NA
	18	6,000	68.9	60.7	54.3	49.1	NA	NA	NA	NA
	22	4,000	73.9	65.1	58.2	52.7	48.1	NA	NA	NA
	26	2,000	74.6	69.6	62.1	56.2	51.4	47.2	NA	NA
	30	0	74.6	73.6	65.7	59.4	54.2	50.0	46.2	NA
20	5	15,000	46.9	NA	NA	NA	NA	NA	NA	NA
	7	14,000	49.7	NA	NA	NA	NA	NA	NA	NA
	11	12,000	54.8	48.2	NA	NA	NA	NA	NA	NA
	15	10,000	58.7	51.7	46.1	NA	NA	NA	NA	NA
	19	8,000	63.0	55.5	49.6	NA	NA	NA	NA	NA
	23	6,000	67.6	59.5	53.3	48.2	NA	NA	NA	NA
	27	4,000	72.3	63.7	56.9	51.6	47.0	NA	NA	NA
	31	2,000	74.6	67.4	60.2	54.5	49.9	45.8	NA	NA
	35	0	74.6	70.6	63.1	57.1	52.2	48.0	NA	NA
25	10	15,000	45.9	NA	NA	NA	NA	NA	NA	NA
	12	14,000	48.8	NA	NA	NA	NA	NA	NA	NA
	16	12,000	53.5	47.0	NA	NA	NA	NA	NA	NA
	20	10,000	57.4	50.6	45.0	NA	NA	NA	NA	NA
	24	8,000	61.7	54.4	48.6	NA	NA	NA	NA	NA
	28	6,000	66.0	58.2	52.1	47.1	NA	NA	NA	NA
	32	4,000	70.1	61.7	55.2	50.0	45.6	NA	NA	NA
	36	2,000	73.2	64.5	57.7	52.3	47.7	NA	NA	NA
	40	0	74.6	67.3	60.1	54.5	49.8	45.7	NA	NA
30	15	15,000	NA	NA	NA	NA	NA	NA	NA	NA
	17	14,000	47.3	NA	NA	NA	NA	NA	NA	NA
	21	12,000	52.4	46.0	NA	NA	NA	NA	NA	NA
	25	10,000	56.3	49.6	NA	NA	NA	NA	NA	NA
	29	8,000	60.1	53.0	47.3	NA	NA	NA	NA	NA
	33	6,000	63.7	56.1	50.3	45.3	NA	NA	NA	NA
	37	4,000	66.8	58.9	52.8	47.7	NA	NA	NA	NA
	41	2,000	69.7	61.4	55.0	49.8	45.4	NA	NA	NA
	45	0	72.5	63.9	57.2	51.9	47.3	NA	NA	NA

NOTES:
1. Maximum climb weights are limited by the design MAX TOGW of 74,600 lb for the GIV-SP and 73,200 for the GIV.
2. Increase MAX TOGW by 300 lb for each 10 knots of headwind up to a maximum of 40 knots. Data not valid for tailwinds.
3. Cowl anti-ice bleeds are assumed ON for temperatures below 10° C; wing anti-ice bleeds prohibited.

Non-SP GIV Climb Limited Weights, Flaps 20°, Standard Instrument Departure, ctd… GIV-OIS-7

GIV TAKEOFF GROSS WEIGHT LIMITED BY REQUIRED SID CLIMB GRADIENT

4000 FT AGL, FLAPS 20, ONE ENGINE OPERATING

DELTA ISA TEMP (DEG C)	AIRPORT AMBIENT TEMP (DEG C)	AIRPORT PRESS ALTITUDE (FT)	TAKEOFF GROSS WEIGHT (1000 LB) REQUIRED SID CLIMB GRADIENT (FT/NM) 200	300	400	500	600	700	800	900
≤ -5	≤ -20	15,000	51.9	45.6	NA	NA	NA	NA	NA	NA
	≤ -18	14,000	53.8	47.3	NA	NA	NA	NA	NA	NA
	≤ -14	12,000	57.9	51.0	45.5	NA	NA	NA	NA	NA
	≤ -10	10,000	62.2	54.8	49.0	NA	NA	NA	NA	NA
	≤ -6	8,000	66.7	58.7	52.6	47.5	NA	NA	NA	NA
	≤ -2	6,000	71.3	62.9	56.2	50.9	46.4	NA	NA	NA
	≤ 2	4,000	74.6	67.2	60.1	54.4	49.7	45.7	NA	NA
	≤ 6	2,000	74.6	70.7	63.2	57.2	52.3	48.2	NA	NA
	≤ 10	0	74.6	74.6	66.8	60.3	55.1	50.8	46.9	NA
0	-15	15,000	51.6	45.2	NA	NA	NA	NA	NA	NA
	-13	14,000	53.4	46.9	NA	NA	NA	NA	NA	NA
	-9	12,000	57.5	50.6	45.1	NA	NA	NA	NA	NA
	-5	10,000	61.7	54.4	48.6	NA	NA	NA	NA	NA
	-1	8,000	66.2	58.3	52.2	47.2	NA	NA	NA	NA
	3	6,000	70.9	62.5	55.8	50.6	46.1	NA	NA	NA
	7	4,000	74.6	66.8	59.7	54.1	49.4	45.4	NA	NA
	11	2,000	74.6	71.1	63.5	57.5	52.6	48.4	NA	NA
	15	0	74.6	74.5	66.6	60.1	54.9	50.7	46.9	NA
5	-10	15,000	50.8	NA	NA	NA	NA	NA	NA	NA
	-8	14,000	52.6	46.2	NA	NA	NA	NA	NA	NA
	-4	12,000	56.9	50.2	NA	NA	NA	NA	NA	NA
	0	10,000	61.1	53.8	48.1	NA	NA	NA	NA	NA
	4	8,000	65.4	57.6	51.6	46.6	NA	NA	NA	NA
	8	6,000	70.0	61.7	55.1	50.0	45.5	NA	NA	NA
	12	4,000	74.6	66.5	59.5	53.9	49.2	45.2	NA	NA
	16	2,000	74.6	70.4	62.9	56.9	52.1	47.9	NA	NA
	20	0	74.6	74.1	66.2	59.8	54.7	50.4	46.7	NA
10	-5	15,000	49.5	NA	NA	NA	NA	NA	NA	NA
	-3	14,000	51.2	NA	NA	NA	NA	NA	NA	NA
	1	12,000	55.8	49.2	NA	NA	NA	NA	NA	NA
	5	10,000	59.9	52.8	47.1	NA	NA	NA	NA	NA
	9	8,000	64.1	56.5	50.6	45.6	NA	NA	NA	NA
	13	6,000	69.3	61.0	54.6	49.5	45.0	NA	NA	NA
	17	4,000	74.1	65.3	58.5	53.0	48.4	NA	NA	NA
	21	2,000	74.6	69.5	62.1	56.2	51.4	47.3	NA	NA
	25	0	74.6	73.4	65.6	59.3	54.2	50.0	46.2	NA

NOTES:
1. Maximum climb weights are limited by the design MAX TOGW of 74,600 lb for the GIV-SP and 73,200 for the GIV.
2. Increase MAX TOGW by 300 lb for each 10 knots of headwind up to a maximum of 40 knots. Data not valid for tailwinds.
3. Cowl anti-ice bleeds are assumed ON for temperatures below 10° C; wing anti-ice bleeds prohibited.

Non-SP GIV Climb Limited Weights, Flaps 20°, Standard Instrument Departure, ctd… GIV-OIS-7

GIV TAKEOFF GROSS WEIGHT LIMITED BY REQUIRED SID CLIMB GRADIENT

4000 FT AGL, FLAPS 20, ONE ENGINE OPERATING, ctd…

DELTA ISA TEMP (DEG C)	AIRPORT AMBIENT TEMP (DEG C)	AIRPORT PRESS ALTITUDE (FT)	TAKEOFF GROSS WEIGHT (1000 LB) REQUIRED SID CLIMB GRADIENT (FT/NM)							
			200	300	400	500	600	700	800	900
15	0	15,000	48.0	NA	NA	NA	NA	NA	NA	NA
	2	14,000	49.6	NA	NA	NA	NA	NA	NA	NA
	6	12,000	54.7	48.1	NA	NA	NA	NA	NA	NA
	10	10,000	59.1	52.1	46.5	NA	NA	NA	NA	NA
	14	8,000	63.3	55.8	50.0	45.0	NA	NA	NA	NA
	18	6,000	67.9	59.9	53.6	48.5	NA	NA	NA	NA
	22	4,000	72.7	64.1	57.4	52.0	47.5	NA	NA	NA
	26	2,000	74.6	68.5	61.3	55.5	50.8	46.7	NA	NA
	30	0	74.6	72.6	64.9	58.7	53.7	49.4	45.7	NA
20	5	15,000	46.3	NA	NA	NA	NA	NA	NA	NA
	7	14,000	47.9	NA	NA	NA	NA	NA	NA	NA
	11	12,000	53.9	47.4	NA	NA	NA	NA	NA	NA
	15	10,000	57.8	51.0	45.5	NA	NA	NA	NA	NA
	19	8,000	62.0	54.7	48.9	NA	NA	NA	NA	NA
	23	6,000	66.5	58.7	52.6	47.5	NA	NA	NA	NA
	27	4,000	71.1	62.7	56.1	50.9	46.4	NA	NA	NA
	31	2,000	74.6	66.5	59.5	53.9	49.3	45.2	NA	NA
	35	0	74.6	70.0	62.6	56.7	51.8	47.7	NA	NA
25	10	15,000	45.4	NA	NA	NA	NA	NA	NA	NA
	12	14,000	47.0	NA	NA	NA	NA	NA	NA	NA
	16	12,000	52.7	46.3	NA	NA	NA	NA	NA	NA
	20	10,000	56.6	49.9	NA	NA	NA	NA	NA	NA
	24	8,000	60.8	53.6	47.9	NA	NA	NA	NA	NA
	28	6,000	65.0	57.4	51.4	46.4	NA	NA	NA	NA
	32	4,000	68.9	60.8	54.4	49.3	NA	NA	NA	NA
	36	2,000	72.5	64.0	57.3	52.0	47.4	NA	NA	NA
	40	0	74.6	66.7	59.7	54.1	49.5	45.5	NA	NA
30	15	15,000	NA	NA	NA	NA	NA	NA	NA	NA
	17	14,000	45.2	NA	NA	NA	NA	NA	NA	NA
	21	12,000	51.5	45.2	NA	NA	NA	NA	NA	NA
	25	10,000	55.3	48.8	NA	NA	NA	NA	NA	NA
	29	8,000	59.2	52.2	46.6	NA	NA	NA	NA	NA
	33	6,000	62.8	55.4	49.7	NA	NA	NA	NA	NA
	37	4,000	66.1	58.3	52.3	47.3	NA	NA	NA	NA
	41	2,000	69.0	60.9	54.6	49.5	45.1	NA	NA	NA
	45	0	71.9	63.5	56.9	51.6	47.1	NA	NA	NA

NOTES:
1. Maximum climb weights are limited by the design MAX TOGW of 74,600 lb for the GIV-SP and 73,200 for the GIV.
2. Increase MAX TOGW by 300 lb for each 10 knots of headwind up to a maximum of 40 knots. Data not valid for tailwinds.
3. Cowl anti-ice bleeds are assumed ON for temperatures below 10° C; wing anti-ice bleeds prohibited.

Non-SP GIV Climb Limited Weights, Flaps 20°, Standard Instrument Departure, ctd… GIV-OIS-7

GIV TAKEOFF GROSS WEIGHT LIMITED BY REQUIRED SID CLIMB GRADIENT

5000 FT AGL, FLAPS 20, ONE ENGINE OPERATING

DELTA ISA TEMP (DEG C)	AIRPORT AMBIENT TEMP (DEG C)	AIRPORT PRESS ALTITUDE (FT)	TAKEOFF GROSS WEIGHT (1000 LB)							
			REQUIRED SID CLIMB GRADIENT (FT/NM)							
			200	300	400	500	600	700	800	900
	≤ -20	15,000	51.6	NA	NA	NA	NA	NA	NA	NA
	≤ -18	14,000	53.0	46.6	NA	NA	NA	NA	NA	NA
	≤ -14	12,000	56.9	50.2	NA	NA	NA	NA	NA	NA
	≤ -10	10,000	61.4	53.9	48.2	NA	NA	NA	NA	NA
≤ -5	≤ -6	8,000	65.7	57.8	51.7	46.7	NA	NA	NA	NA
	≤ -2	6,000	70.2	61.9	55.3	50.1	45.7	NA	NA	NA
	≤ 2	4,000	74.6	66.2	59.2	53.6	49.0	NA	NA	NA
	≤ 6	2,000	74.6	69.6	62.2	56.3	51.5	47.4	NA	NA
	≤ 10	0	74.6	73.5	65.7	59.4	54.3	50.0	46.3	NA
	-15	15,000	50.9	NA	NA	NA	NA	NA	NA	NA
	-13	14,000	52.6	46.2	NA	NA	NA	NA	NA	NA
	-9	12,000	56.9	49.7	NA	NA	NA	NA	NA	NA
	-5	10,000	60.7	53.5	47.8	NA	NA	NA	NA	NA
0	-1	8,000	65.4	57.4	51.3	46.4	NA	NA	NA	NA
	3	6,000	69.9	61.4	54.9	49.8	45.3	NA	NA	NA
	7	4,000	74.6	65.7	58.8	53.2	48.6	NA	NA	NA
	11	2,000	74.6	70.0	62.5	56.6	51.8	47.6	NA	NA
	15	0	74.6	73.3	65.5	59.2	54.1	49.9	46.1	NA
	-10	15,000	50.8	NA	NA	NA	NA	NA	NA	NA
	-8	14,000	51.8	45.5	NA	NA	NA	NA	NA	NA
	-4	12,000	55.8	49.1	NA	NA	NA	NA	NA	NA
	0	10,000	60.5	52.9	47.3	NA	NA	NA	NA	NA
5	4	8,000	64.6	56.7	50.7	45.8	NA	NA	NA	NA
	8	6,000	68.9	60.7	54.3	49.2	NA	NA	NA	NA
	12	4,000	74.5	65.5	58.6	53.1	48.5	NA	NA	NA
	16	2,000	74.6	69.2	61.9	56.0	51.3	47.1	NA	NA
	20	0	74.6	72.9	65.2	58.9	53.8	49.6	45.9	NA
	-5	15,000	48.9	NA	NA	NA	NA	NA	NA	NA
	-3	14,000	50.5	NA	NA	NA	NA	NA	NA	NA
	1	12,000	54.9	48.0	NA	NA	NA	NA	NA	NA
	5	10,000	58.9	51.9	46.3	NA	NA	NA	NA	NA
10	9	8,000	63.4	55.6	49.8	NA	NA	NA	NA	NA
	13	6,000	68.4	60.1	53.7	48.7	NA	NA	NA	NA
	17	4,000	72.9	64.3	57.5	52.1	47.6	NA	NA	NA
	21	2,000	74.6	68.3	61.1	55.3	50.6	46.5	NA	NA
	25	0	74.6	72.3	64.6	58.4	53.4	49.2	45.5	NA

NOTES:
1. Maximum climb weights are limited by the design MAX TOGW of 74,600 lb for the GIV-SP and 73,200 for the GIV.
2. Increase MAX TOGW by 300 lb for each 10 knots of headwind up to a maximum of 40 knots. Data not valid for tailwinds.
3. Cowl anti-ice bleeds are assumed ON for temperatures below 10° C; wing anti-ice bleeds prohibited.

Non-SP GIV Climb Limited Weights, Flaps 20°, Standard Instrument Departure, ctd… GIV-OIS-7

GIV TAKEOFF GROSS WEIGHT LIMITED BY REQUIRED SID CLIMB GRADIENT

5000 FT AGL, FLAPS 20, ONE ENGINE OPERATING, ctd…

DELTA ISA TEMP (DEG C)	AIRPORT AMBIENT TEMP (DEG C)	AIRPORT PRESS ALTITUDE (FT)	TAKEOFF GROSS WEIGHT (1000 LB) REQUIRED SID CLIMB GRADIENT (FT/NM) 200	300	400	500	600	700	800	900
15	0	15,000	47.4	NA	NA	NA	NA	NA	NA	NA
	2	14,000	49.0	NA	NA	NA	NA	NA	NA	NA
	6	12,000	53.6	46.7	NA	NA	NA	NA	NA	NA
	10	10,000	58.6	51.3	45.7	NA	NA	NA	NA	NA
	14	8,000	62.7	54.9	49.2	NA	NA	NA	NA	NA
	18	6,000	66.8	58.9	52.7	47.7	NA	NA	NA	NA
	22	4,000	71.7	63.1	56.4	51.2	46.7	NA	NA	NA
	26	2,000	74.6	67.4	60.3	54.6	49.9	45.9	NA	NA
	30	0	74.6	71.5	63.9	57.8	52.9	48.7	45.0	NA
20	5	15,000	45.7	NA	NA	NA	NA	NA	NA	NA
	7	14,000	47.3	NA	NA	NA	NA	NA	NA	NA
	11	12,000	52.8	45.9	NA	NA	NA	NA	NA	NA
	15	10,000	56.9	50.2	NA	NA	NA	NA	NA	NA
	19	8,000	61.3	53.8	48.1	NA	NA	NA	NA	NA
	23	6,000	65.7	57.7	51.7	46.7	NA	NA	NA	NA
	27	4,000	70.0	61.7	55.2	50.1	45.6	NA	NA	NA
	31	2,000	74.0	65.4	58.5	53.1	48.5	NA	NA	NA
	35	0	74.6	69.1	61.8	55.9	51.2	47.1	NA	NA
25	10	15,000	NA	NA	NA	NA	NA	NA	NA	NA
	12	14,000	46.4	NA	NA	NA	NA	NA	NA	NA
	16	12,000	50.8	NA	NA	NA	NA	NA	NA	NA
	20	10,000	55.7	49.1	NA	NA	NA	NA	NA	NA
	24	8,000	59.7	52.7	47.1	NA	NA	NA	NA	NA
	28	6,000	64.0	56.4	50.6	45.6	NA	NA	NA	NA
	32	4,000	67.6	59.7	53.5	48.4	NA	NA	NA	NA
	36	2,000	71.4	63.2	56.6	51.3	46.8	NA	NA	NA
	40	0	74.3	66.0	59.1	53.6	49.0	NA	NA	NA
30	15	15,000	NA	NA	NA	NA	NA	NA	NA	NA
	17	14,000	NA	NA	NA	NA	NA	NA	NA	NA
	21	12,000	49.9	NA	NA	NA	NA	NA	NA	NA
	25	10,000	54.8	48.0	NA	NA	NA	NA	NA	NA
	29	8,000	58.4	51.4	45.8	NA	NA	NA	NA	NA
	33	6,000	61.7	54.5	48.8	NA	NA	NA	NA	NA
	37	4,000	64.9	57.5	51.6	46.6	NA	NA	NA	NA
	41	2,000	67.6	60.2	54.0	48.9	NA	NA	NA	NA
	45	0	70.3	62.8	56.3	51.1	46.6	NA	NA	NA

NOTES:
1. Maximum climb weights are limited by the design MAX TOGW of 74,600 lb for the GIV-SP and 73,200 for the GIV.
2. Increase MAX TOGW by 300 lb for each 10 knots of headwind up to a maximum of 40 knots. Data not valid for tailwinds.
3. Cowl anti-ice bleeds are assumed ON for temperatures below 10° C; wing anti-ice bleeds prohibited.

Non-SP GIV Climb Limited Weights, Flaps 20°, Standard Instrument Departure, ctd… GIV-OIS-7

GIV TAKEOFF GROSS WEIGHT LIMITED BY REQUIRED SID CLIMB GRADIENT

6000 FT AGL, FLAPS 20, ONE ENGINE OPERATING

DELTA ISA TEMP (DEG C)	AIRPORT AMBIENT TEMP (DEG C)	AIRPORT PRESS ALTITUDE (FT)	TAKEOFF GROSS WEIGHT (1000 LB)							
			REQUIRED SID CLIMB GRADIENT (FT/NM)							
			200	300	400	500	600	700	800	900
	≤ -20	15,000	48.1	NA	NA	NA	NA	NA	NA	NA
	≤ -18	14,000	49.7	45.8	NA	NA	NA	NA	NA	NA
	≤ -14	12,000	53.1	49.3	NA	NA	NA	NA	NA	NA
	≤ -10	10,000	56.8	53.0	47.3	NA	NA	NA	NA	NA
≤ -5	≤ -6	8,000	60.8	56.8	50.9	45.9	NA	NA	NA	NA
	≤ -2	6,000	65.0	60.9	54.4	49.3	NA	NA	NA	NA
	≤ 2	4,000	69.4	65.1	58.2	52.8	48.2	NA	NA	NA
	≤ 6	2,000	72.6	68.5	61.2	55.4	50.7	46.6	NA	NA
	≤ 10	0	74.6	72.2	64.6	58.4	53.4	49.2	45.5	NA
	-15	15,000	47.9	NA	NA	NA	NA	NA	NA	NA
	-13	14,000	49.6	45.6	NA	NA	NA	NA	NA	NA
	-9	12,000	52.8	48.9	NA	NA	NA	NA	NA	NA
	-5	10,000	56.5	52.6	47.0	NA	NA	NA	NA	NA
0	-1	8,000	60.5	56.4	50.5	45.6	NA	NA	NA	NA
	3	6,000	64.7	60.5	54.1	49.0	NA	NA	NA	NA
	7	4,000	69.0	64.7	57.8	52.4	47.9	NA	NA	NA
	11	2,000	73.3	68.8	61.5	55.7	51.0	46.9	NA	NA
	15	0	74.6	72.1	64.4	58.3	53.3	49.1	45.4	NA
	-10	15,000	47.5	NA	NA	NA	NA	NA	NA	NA
	-8	14,000	49.1	NA	NA	NA	NA	NA	NA	NA
	-4	12,000	52.1	48.1	NA	NA	NA	NA	NA	NA
	0	10,000	56.0	52.1	46.4	NA	NA	NA	NA	NA
5	4	8,000	59.9	55.8	49.9	45.0	NA	NA	NA	NA
	8	6,000	64.0	59.8	53.5	48.4	NA	NA	NA	NA
	12	4,000	69.1	64.5	57.7	52.3	47.7	NA	NA	NA
	16	2,000	72.6	68.1	60.9	55.1	50.4	46.4	NA	NA
	20	0	74.6	71.7	64.1	58.0	53.0	48.8	45.1	NA
	-5	15,000	46.4	NA	NA	NA	NA	NA	NA	NA
	-3	14,000	47.9	NA	NA	NA	NA	NA	NA	NA
	1	12,000	50.7	46.8	NA	NA	NA	NA	NA	NA
	5	10,000	54.9	51.1	45.5	NA	NA	NA	NA	NA
10	9	8,000	58.7	54.7	49.0	NA	NA	NA	NA	NA
	13	6,000	63.4	59.1	52.9	47.9	NA	NA	NA	NA
	17	4,000	67.7	63.3	56.6	51.3	46.8	NA	NA	NA
	21	2,000	71.7	67.2	60.1	54.4	49.8	45.7	NA	NA
	25	0	74.6	71.1	63.5	57.5	52.6	48.4	NA	NA

NOTES:

1. Maximum climb weights are limited by the design MAX TOGW of 74,600 lb for the GIV-SP and 73,200 for the GIV.
2. Increase MAX TOGW by 300 lb for each 10 knots of headwind up to a maximum of 40 knots. Data not valid for tailwinds.
3. Cowl anti-ice bleeds are assumed ON for temperatures below 10° C; wing anti-ice bleeds prohibited.

Non-SP GIV Climb Limited Weights, Flaps 20°, Standard Instrument Departure, ctd… GIV-OIS-7

GIV TAKEOFF GROSS WEIGHT LIMITED BY REQUIRED SID CLIMB GRADIENT

6000 FT AGL, FLAPS 20, ONE ENGINE OPERATING, ctd…

DELTA ISA TEMP (DEG C)	AIRPORT AMBIENT TEMP (DEG C)	AIRPORT PRESS ALTITUDE (FT)	TAKEOFF GROSS WEIGHT (1000 LB)							
			REQUIRED SID CLIMB GRADIENT (FT/NM)							
			200	300	400	500	600	700	800	900
15	0	15,000	45.1	NA	NA	NA	NA	NA	NA	NA
	2	14,000	46.6	NA	NA	NA	NA	NA	NA	NA
	6	12,000	49.3	45.3	NA	NA	NA	NA	NA	NA
	10	10,000	54.3	50.4	NA	NA	NA	NA	NA	NA
	14	8,000	58.1	54.1	48.4	NA	NA	NA	NA	NA
	18	6,000	62.2	58.0	51.9	46.9	NA	NA	NA	NA
	22	4,000	66.4	62.0	55.5	50.3	45.9	NA	NA	NA
	26	2,000	70.8	66.3	59.3	53.7	49.1	45.1	NA	NA
	30	0	74.6	70.4	62.9	56.9	52.1	47.9	NA	NA
20	5	15,000	NA	NA	NA	NA	NA	NA	NA	NA
	7	14,000	45.1	NA	NA	NA	NA	NA	NA	NA
	11	12,000	48.5	NA	NA	NA	NA	NA	NA	NA
	15	10,000	53.3	49.4	NA	NA	NA	NA	NA	NA
	19	8,000	56.9	53.0	47.4	NA	NA	NA	NA	NA
	23	6,000	60.9	56.8	50.9	45.9	NA	NA	NA	NA
	27	4,000	64.8	60.7	54.4	49.2	NA	NA	NA	NA
	31	2,000	68.4	64.3	57.5	52.2	47.6	NA	NA	NA
	35	0	72.3	68.0	60.8	55.1	50.4	46.3	NA	NA
25	10	15,000	NA	NA	NA	NA	NA	NA	NA	NA
	12	14,000	NA	NA	NA	NA	NA	NA	NA	NA
	16	12,000	46.9	NA	NA	NA	NA	NA	NA	NA
	20	10,000	52.2	48.2	NA	NA	NA	NA	NA	NA
	24	8,000	55.6	51.9	46.3	NA	NA	NA	NA	NA
	28	6,000	59.4	55.5	49.7	NA	NA	NA	NA	NA
	32	4,000	62.5	58.7	52.7	47.6	NA	NA	NA	NA
	36	2,000	65.9	62.1	55.6	50.5	46.0	NA	NA	NA
	40	0	69.2	65.3	58.5	53.0	48.5	NA	NA	NA
30	15	15,000	NA	NA	NA	NA	NA	NA	NA	NA
	17	14,000	NA	NA	NA	NA	NA	NA	NA	NA
	21	12,000	45.4	NA	NA	NA	NA	NA	NA	NA
	25	10,000	51.1	47.1	NA	NA	NA	NA	NA	NA
	29	8,000	54.2	50.5	NA	NA	NA	NA	NA	NA
	33	6,000	57.2	53.6	48.0	NA	NA	NA	NA	NA
	37	4,000	60.1	56.7	50.9	45.9	NA	NA	NA	NA
	41	2,000	62.8	59.5	53.4	48.3	NA	NA	NA	NA
	45	0	65.4	62.2	55.8	50.6	46.1	NA	NA	NA

NOTES:
1. Maximum climb weights are limited by the design MAX TOGW of 74,600 lb for the GIV-SP and 73,200 for the GIV.
2. Increase MAX TOGW by 300 lb for each 10 knots of headwind up to a maximum of 40 knots. Data not valid for tailwinds.
3. Cowl anti-ice bleeds are assumed ON for temperatures below 10° C; wing anti-ice bleeds prohibited.

Non-SP GIV Takeoff Climb Requirements:
Climb Limited Weights:
Flaps 10° - Standard Instrument Departure

GIV-OIS-7

NOTE: For complete text and examples, see **GIV Operating Manual Section 11-04-40 or Operational Information Supplement number GIV-OIS-07: Standard Instrument Departure (SID) Climb Performance**.

GIV TAKEOFF GROSS WEIGHT LIMITED BY REQUIRED SID CLIMB GRADIENT

1000 FT AGL, FLAPS 10, ONE ENGINE OPERATING

DELTA ISA TEMP (DEG C)	AIRPORT AMBIENT TEMP (DEG C)	AIRPORT PRESS ALTITUDE (FT)	TAKEOFF GROSS WEIGHT (1000 LB)							
			REQUIRED SID CLIMB GRADIENT (FT/NM)							
			200	300	400	500	600	700	800	900
≤ -5	≤ -20	15,000	60.1	52.0	45.9	NA	NA	NA	NA	NA
	≤ -18	14,000	62.3	53.9	47.6	NA	NA	NA	NA	NA
	≤ -14	12,000	66.9	57.9	51.1	45.8	NA	NA	NA	NA
	≤ -10	10,000	71.7	62.1	54.8	49.0	NA	NA	NA	NA
	≤ -6	8,000	74.6	66.4	58.6	52.5	47.6	NA	NA	NA
	≤ -2	6,000	74.6	70.9	62.6	56.0	50.7	46.6	NA	NA
	≤ 2	4,000	74.6	74.6	66.8	59.9	54.2	49.6	45.9	NA
	≤ 6	2,000	74.6	74.6	69.7	62.4	56.4	51.7	47.7	NA
	≤ 10	0	74.6	74.6	72.2	64.7	58.5	53.5	49.4	45.9
0	-15	15,000	59.6	51.6	45.5	NA	NA	NA	NA	NA
	-13	14,000	61.8	53.5	47.2	NA	NA	NA	NA	NA
	-9	12,000	66.4	57.5	50.7	45.4	NA	NA	NA	NA
	-5	10,000	71.1	61.6	54.3	48.7	NA	NA	NA	NA
	-1	8,000	74.6	65.9	58.2	52.1	47.3	NA	NA	NA
	3	6,000	74.6	70.5	62.2	55.7	50.5	46.3	NA	NA
	7	4,000	74.6	74.6	66.4	59.5	53.8	49.3	45.6	NA
	11	2,000	74.6	74.6	70.2	62.9	56.9	52.0	48.1	NA
	15	0	74.6	74.6	72.2	64.7	58.5	53.4	49.3	45.9
5	-10	15,000	59.1	51.1	45.1	NA	NA	NA	NA	NA
	-8	14,000	61.3	53.0	46.8	NA	NA	NA	NA	NA
	-4	12,000	65.7	56.9	50.2	NA	NA	NA	NA	NA
	0	10,000	70.3	60.8	53.7	48.1	NA	NA	NA	NA
	4	8,000	74.6	65.1	57.4	51.4	46.7	NA	NA	NA
	8	6,000	74.6	69.6	61.4	55.0	49.8	45.7	NA	NA
	12	4,000	74.6	74.6	66.3	59.4	53.7	49.2	45.5	NA
	16	2,000	74.6	74.6	69.5	62.2	56.3	51.5	47.6	NA
	20	0	74.6	74.6	72.2	64.6	58.5	53.4	49.3	45.9
10	-5	15,000	58.1	50.2	NA	NA	NA	NA	NA	NA
	-3	14,000	60.1	52.0	45.9	NA	NA	NA	NA	NA
	1	12,000	64.4	55.8	49.2	NA	NA	NA	NA	NA
	5	10,000	68.8	59.6	52.6	47.2	NA	NA	NA	NA
	9	8,000	73.6	63.8	56.3	50.4	45.8	NA	NA	NA
	13	6,000	74.6	68.9	60.8	54.5	49.4	45.3	NA	NA
	17	4,000	74.6	73.7	65.1	58.3	52.8	48.4	NA	NA
	21	2,000	74.6	74.6	68.8	61.6	55.7	51.0	47.2	NA
	25	0	74.6	74.6	72.1	64.6	58.5	53.4	49.3	45.9

NOTES:
1. Maximum climb weights are limited by the design MAX TOGW of 74,600 lb for the GIV-SP and 73,200 for the GIV.
2. Increase MAX TOGW by 300 lb for each 10 knots of headwind up to a maximum of 40 knots. Data not valid for tailwinds.
3. Cowl anti-ice bleeds are assumed ON for temperatures below 10° C; wing anti-ice bleeds prohibited.

Non-SP GIV Climb Limited Weights, Flaps 10°, Standard Instrument Departure, ctd… GIV-OIS-7

GIV TAKEOFF GROSS WEIGHT LIMITED BY REQUIRED SID CLIMB GRADIENT

1000 FT AGL, FLAPS 10, ONE ENGINE OPERATING, ctd…

DELTA ISA TEMP (DEG C)	AIRPORT AMBIENT TEMP (DEG C)	AIRPORT PRESS ALTITUDE (FT)	TAKEOFF GROSS WEIGHT (1000 LB) REQUIRED SID CLIMB GRADIENT (FT/NM) 200	300	400	500	600	700	800	900
15	0	15,000	56.8	49.2	NA	NA	NA	NA	NA	NA
	2	14,000	58.8	50.9	NA	NA	NA	NA	NA	NA
	6	12,000	63.0	54.6	48.2	NA	NA	NA	NA	NA
	10	10,000	68.0	58.9	51.9	46.6	NA	NA	NA	NA
	14	8,000	72.8	63.0	55.6	49.9	45.3	NA	NA	NA
	18	6,000	74.6	67.6	59.7	53.5	48.5	NA	NA	NA
	22	4,000	74.6	72.4	63.9	57.3	51.9	47.6	NA	NA
	26	2,000	74.6	74.6	68.1	61.0	55.1	50.5	46.7	NA
	30	0	74.6	74.6	71.7	64.2	58.1	53.1	49.0	45.6
20	5	15,000	55.5	48.1	NA	NA	NA	NA	NA	NA
	7	14,000	57.5	49.8	NA	NA	NA	NA	NA	NA
	11	12,000	62.1	53.8	47.5	NA	NA	NA	NA	NA
	15	10,000	66.6	57.6	50.9	45.7	NA	NA	NA	NA
	19	8,000	71.3	61.8	54.6	48.9	NA	NA	NA	NA
	23	6,000	74.6	66.3	58.6	52.5	47.7	NA	NA	NA
	27	4,000	74.6	70.7	62.5	56.0	50.8	46.6	NA	NA
	31	2,000	74.6	74.1	65.5	58.7	53.2	48.8	45.1	NA
	35	0	74.6	74.6	68.4	61.3	55.5	50.8	47.0	NA
25	10	15,000	54.7	47.3	NA	NA	NA	NA	NA	NA
	12	14,000	56.7	49.1	NA	NA	NA	NA	NA	NA
	16	12,000	60.8	52.6	46.5	NA	NA	NA	NA	NA
	20	10,000	65.1	56.4	49.8	NA	NA	NA	NA	NA
	24	8,000	69.8	60.5	53.4	48.0	NA	NA	NA	NA
	28	6,000	74.6	64.9	57.3	51.4	46.7	NA	NA	NA
	32	4,000	74.6	67.8	60.0	53.8	48.8	NA	NA	NA
	36	2,000	74.6	70.7	62.5	56.0	50.9	46.7	NA	NA
	40	0	74.6	73.6	65.1	58.3	52.9	48.5	NA	NA
30	15	15,000	53.4	46.2	NA	NA	NA	NA	NA	NA
	17	14,000	55.4	47.9	NA	NA	NA	NA	NA	NA
	21	12,000	59.5	51.5	45.6	NA	NA	NA	NA	NA
	25	10,000	63.7	55.2	48.8	NA	NA	NA	NA	NA
	29	8,000	67.9	58.9	52.0	46.7	NA	NA	NA	NA
	33	6,000	71.3	61.9	54.7	49.1	NA	NA	NA	NA
	37	4,000	74.4	64.6	57.1	51.3	46.7	NA	NA	NA
	41	2,000	74.6	67.2	59.4	53.3	48.5	NA	NA	NA
	45	0	74.6	69.9	61.9	55.4	50.4	46.3	NA	NA

NOTES:
1. Maximum climb weights are limited by the design MAX TOGW of 74,600 lb for the GIV-SP and 73,200 for the GIV.
2. Increase MAX TOGW by 300 lb for each 10 knots of headwind up to a maximum of 40 knots. Data not valid for tailwinds.
3. Cowl anti-ice bleeds are assumed ON for temperatures below 10° C; wing anti-ice bleeds prohibited.

Non-SP GIV Climb Limited Weights, Flaps 10°, Standard Instrument Departure, ctd… GIV-OIS-7

GIV TAKEOFF GROSS WEIGHT LIMITED BY REQUIRED SID CLIMB GRADIENT

2000 FT AGL, FLAPS 10, ONE ENGINE OPERATING

DELTA ISA TEMP (DEG C)	AIRPORT AMBIENT TEMP (DEG C)	AIRPORT PRESS ALTITUDE (FT)	TAKEOFF GROSS WEIGHT (1000 LB)							
			REQUIRED SID CLIMB GRADIENT (FT/NM)							
			200	300	400	500	600	700	800	900
≤ -5	≤ -20	15,000	59.2	51.3	45.4	NA	NA	NA	NA	NA
	≤ -18	14,000	61.3	53.2	47.1	NA	NA	NA	NA	NA
	≤ -14	12,000	65.8	57.2	50.6	45.4	NA	NA	NA	NA
	≤ -10	10,000	70.6	61.3	54.2	48.7	NA	NA	NA	NA
	≤ -6	8,000	74.6	65.6	58.0	52.1	47.4	NA	NA	NA
	≤ -2	6,000	74.6	70.1	62.0	55.6	50.5	46.4	NA	NA
	≤ 2	4,000	74.6	74.6	66.2	59.5	53.9	49.4	45.8	NA
	≤ 6	2,000	74.6	74.6	69.7	62.4	56.4	51.7	47.7	NA
	≤ 10	0	74.6	74.6	72.2	64.7	58.5	53.5	49.4	45.9
0	-15	15,000	58.7	50.9	45.0	NA	NA	NA	NA	NA
	-13	14,000	60.8	52.8	46.7	NA	NA	NA	NA	NA
	-9	12,000	65.3	56.7	50.2	45.1	NA	NA	NA	NA
	-5	10,000	70.0	60.8	53.8	48.3	NA	NA	NA	NA
	-1	8,000	74.6	65.1	57.6	51.7	47.1	NA	NA	NA
	3	6,000	74.6	69.7	61.7	55.3	50.2	46.1	NA	NA
	7	4,000	74.6	74.4	65.8	59.1	53.6	49.2	45.5	NA
	11	2,000	74.6	74.6	70.0	62.8	56.9	52.0	48.1	NA
	15	0	74.6	74.6	72.2	64.7	58.5	53.4	49.3	45.9
5	-10	15,000	58.0	50.3	NA	NA	NA	NA	NA	NA
	-8	14,000	60.3	52.4	46.3	NA	NA	NA	NA	NA
	-4	12,000	64.7	56.2	49.7	NA	NA	NA	NA	NA
	0	10,000	69.2	60.2	53.2	47.8	NA	NA	NA	NA
	4	8,000	74.0	64.3	56.9	51.0	46.5	NA	NA	NA
	8	6,000	74.6	68.7	60.8	54.6	49.6	45.5	NA	NA
	12	4,000	74.6	74.2	65.7	58.9	53.5	49.0	45.4	NA
	16	2,000	74.6	74.6	69.4	62.2	56.3	51.5	47.6	NA
	20	0	74.6	74.6	72.0	64.6	58.5	53.4	49.3	45.9
10	-5	15,000	56.7	49.2	NA	NA	NA	NA	NA	NA
	-3	14,000	59.2	51.4	45.5	NA	NA	NA	NA	NA
	1	12,000	63.4	55.1	48.7	NA	NA	NA	NA	NA
	5	10,000	67.8	58.9	52.1	46.9	NA	NA	NA	NA
	9	8,000	72.5	63.0	55.8	50.1	45.6	NA	NA	NA
	13	6,000	74.6	68.0	60.2	54.1	49.1	45.1	NA	NA
	17	4,000	74.6	72.8	64.5	57.9	52.5	48.2	NA	NA
	21	2,000	74.6	74.6	68.5	61.4	55.7	51.0	47.2	NA
	25	0	74.6	74.6	71.8	64.4	58.4	53.4	49.3	45.9

NOTES:
1. Maximum climb weights are limited by the design MAX TOGW of 74,600 lb for the GIV-SP and 73,200 for the GIV.
2. Increase MAX TOGW by 300 lb for each 10 knots of headwind up to a maximum of 40 knots. Data not valid for tailwinds.
3. Cowl anti-ice bleeds are assumed ON for temperatures below 10° C; wing anti-ice bleeds prohibited.

Non-SP GIV Climb Limited Weights, Flaps 10°, Standard Instrument Departure, ctd… GIV-OIS-7

GIV TAKEOFF GROSS WEIGHT LIMITED BY REQUIRED SID CLIMB GRADIENT

2000 FT AGL, FLAPS 10, ONE ENGINE OPERATING, ctd…

DELTA ISA TEMP (DEG C)	AIRPORT AMBIENT TEMP (DEG C)	AIRPORT PRESS ALTITUDE (FT)	TAKEOFF GROSS WEIGHT (1000 LB)							
			REQUIRED SID CLIMB GRADIENT (FT/NM)							
			200	300	400	500	600	700	800	900
15	0	15,000	55.2	47.9	NA	NA	NA	NA	NA	NA
	2	14,000	57.9	50.3	NA	NA	NA	NA	NA	NA
	6	12,000	62.0	53.9	47.7	NA	NA	NA	NA	NA
	10	10,000	66.9	58.2	51.5	46.3	NA	NA	NA	NA
	14	8,000	71.6	62.3	55.1	49.5	45.1	NA	NA	NA
	18	6,000	74.6	66.8	59.1	53.1	48.3	NA	NA	NA
	22	4,000	74.6	71.5	63.3	56.8	51.6	47.4	NA	NA
	26	2,000	74.6	74.6	67.5	60.6	54.9	50.4	46.7	NA
	30	0	74.6	74.6	71.4	64.1	58.1	53.1	49.0	45.6
20	5	15,000	53.7	46.6	NA	NA	NA	NA	NA	NA
	7	14,000	56.6	49.2	NA	NA	NA	NA	NA	NA
	11	12,000	61.2	53.1	47.1	NA	NA	NA	NA	NA
	15	10,000	65.5	56.9	50.4	45.3	NA	NA	NA	NA
	19	8,000	70.2	61.0	54.0	48.6	NA	NA	NA	NA
	23	6,000	74.6	65.4	58.0	52.0	47.4	NA	NA	NA
	27	4,000	74.6	69.9	61.9	55.6	50.5	46.5	NA	NA
	31	2,000	74.6	73.7	65.3	58.6	53.2	48.8	45.1	NA
	35	0	74.6	74.6	68.2	61.3	55.5	50.8	47.0	NA
25	10	15,000	52.7	45.8	NA	NA	NA	NA	NA	NA
	12	14,000	55.7	48.5	NA	NA	NA	NA	NA	NA
	16	12,000	59.8	52.0	46.1	NA	NA	NA	NA	NA
	20	10,000	64.1	55.7	49.4	NA	NA	NA	NA	NA
	24	8,000	68.7	59.8	52.9	47.6	NA	NA	NA	NA
	28	6,000	73.5	64.0	56.7	50.9	46.4	NA	NA	NA
	32	4,000	74.6	67.4	59.8	53.7	48.8	NA	NA	NA
	36	2,000	74.6	70.3	62.3	56.0	50.9	46.7	NA	NA
	40	0	74.6	73.2	64.9	58.3	52.9	48.5	NA	NA
30	15	15,000	51.2	NA	NA	NA	NA	NA	NA	NA
	17	14,000	54.4	47.3	NA	NA	NA	NA	NA	NA
	21	12,000	58.5	50.8	45.1	NA	NA	NA	NA	NA
	25	10,000	62.7	54.5	48.3	NA	NA	NA	NA	NA
	29	8,000	67.0	58.2	51.6	46.5	NA	NA	NA	NA
	33	6,000	70.6	61.5	54.5	49.0	NA	NA	NA	NA
	37	4,000	73.7	64.2	57.0	51.3	46.7	NA	NA	NA
	41	2,000	74.6	66.8	59.3	53.3	48.5	NA	NA	NA
	45	0	74.6	69.6	61.7	55.4	50.4	46.3	NA	NA

NOTES:

1. Maximum climb weights are limited by the design MAX TOGW of 74,600 lb for the GIV-SP and 73,200 for the GIV.
2. Increase MAX TOGW by 300 lb for each 10 knots of headwind up to a maximum of 40 knots. Data not valid for tailwinds.
3. Cowl anti-ice bleeds are assumed ON for temperatures below 10° C; wing anti-ice bleeds prohibited.

Non-SP GIV Climb Limited Weights, Flaps 10°, Standard Instrument Departure, ctd… GIV-OIS-7

GIV TAKEOFF GROSS WEIGHT LIMITED BY REQUIRED SID CLIMB GRADIENT

3000 FT AGL, FLAPS 10, ONE ENGINE OPERATING

DELTA ISA TEMP (DEG C)	AIRPORT AMBIENT TEMP (DEG C)	AIRPORT PRESS ALTITUDE (FT)	TAKEOFF GROSS WEIGHT (1000 LB)							
			REQUIRED SID CLIMB GRADIENT (FT/NM)							
			200	300	400	500	600	700	800	900
	≤ -20	15,000	58.1	50.5	NA	NA	NA	NA	NA	NA
	≤ -18	14,000	60.3	52.4	46.4	NA	NA	NA	NA	NA
	≤ -14	12,000	64.7	56.3	49.8	NA	NA	NA	NA	NA
	≤ -10	10,000	69.4	60.4	53.4	48.0	NA	NA	NA	NA
≤ -5	≤ -6	8,000	74.2	64.6	57.2	51.4	46.8	NA	NA	NA
	≤ -2	6,000	74.6	69.1	61.2	54.9	49.9	45.9	NA	NA
	≤ 2	4,000	74.6	73.7	65.3	58.7	53.3	48.9	45.3	NA
	≤ 6	2,000	74.6	74.6	68.7	61.7	56.0	51.3	47.5	NA
	≤ 10	0	74.6	74.6	71.9	64.6	58.5	53.5	49.4	45.9
	-15	15,000	57.6	50.0	NA	NA	NA	NA	NA	NA
	-13	14,000	59.7	51.9	46.0	NA	NA	NA	NA	NA
	-9	12,000	64.2	55.8	49.4	NA	NA	NA	NA	NA
	-5	10,000	68.8	59.9	53.0	47.7	NA	NA	NA	NA
0	-1	8,000	73.7	64.1	56.8	51.0	46.4	NA	NA	NA
	3	6,000	74.6	68.6	60.8	54.6	49.6	45.6	NA	NA
	7	4,000	74.6	73.2	64.9	58.3	52.9	48.6	NA	NA
	11	2,000	74.6	74.6	69.0	62.0	56.2	51.6	47.7	NA
	15	0	74.6	74.6	71.9	64.6	58.5	53.4	49.3	45.9
	-10	15,000	56.8	49.3	NA	NA	NA	NA	NA	NA
	-8	14,000	59.1	51.3	45.5	NA	NA	NA	NA	NA
	-4	12,000	63.6	55.3	49.0	NA	NA	NA	NA	NA
	0	10,000	68.0	59.2	52.4	47.1	NA	NA	NA	NA
5	4	8,000	72.7	63.3	56.1	50.3	45.9	NA	NA	NA
	8	6,000	74.6	67.7	60.0	53.9	49.0	45.0	NA	NA
	12	4,000	74.6	73.0	64.7	58.1	52.8	48.5	NA	NA
	16	2,000	74.6	74.6	68.4	61.4	55.7	51.1	47.3	NA
	20	0	74.6	74.6	71.4	64.2	58.2	53.3	49.3	45.9
	-5	15,000	55.2	48.0	NA	NA	NA	NA	NA	NA
	-3	14,000	57.7	50.2	NA	NA	NA	NA	NA	NA
	1	12,000	62.3	54.2	48.0	NA	NA	NA	NA	NA
	5	10,000	66.7	58.0	51.4	46.3	NA	NA	NA	NA
10	9	8,000	71.3	62.0	55.0	49.4	NA	NA	NA	NA
	13	6,000	74.6	67.0	59.4	53.3	48.5	NA	NA	NA
	17	4,000	74.6	71.7	63.5	57.1	51.8	47.7	NA	NA
	21	2,000	74.6	74.6	67.5	60.6	55.0	50.5	46.8	NA
	25	0	74.6	74.6	71.0	63.8	57.9	53.0	49.0	45.7

NOTES:

1. Maximum climb weights are limited by the design MAX TOGW of 74,600 lb for the GIV-SP and 73,200 for the GIV.
2. Increase MAX TOGW by 300 lb for each 10 knots of headwind up to a maximum of 40 knots. Data not valid for tailwinds.
3. Cowl anti-ice bleeds are assumed ON for temperatures below 10° C; wing anti-ice bleeds prohibited.

Non-SP GIV Climb Limited Weights, Flaps 10°, Standard Instrument Departure, ctd… GIV-OIS-7

GIV TAKEOFF GROSS WEIGHT LIMITED BY REQUIRED SID CLIMB GRADIENT

3000 FT AGL, FLAPS 10, ONE ENGINE OPERATING, ctd…

DELTA ISA TEMP (DEG C)	AIRPORT AMBIENT TEMP (DEG C)	AIRPORT PRESS ALTITUDE (FT)	TAKEOFF GROSS WEIGHT (1000 LB)							
			REQUIRED SID CLIMB GRADIENT (FT/NM)							
			200	300	400	500	600	700	800	900
15	0	15,000	53.5	46.6	NA	NA	NA	NA	NA	NA
	2	14,000	56.2	48.9	NA	NA	NA	NA	NA	NA
	6	12,000	61.0	53.1	47.0	NA	NA	NA	NA	NA
	10	10,000	65.8	57.3	50.7	45.7	NA	NA	NA	NA
	14	8,000	70.4	61.3	54.3	48.9	NA	NA	NA	NA
	18	6,000	74.6	65.7	58.2	52.3	47.6	NA	NA	NA
	22	4,000	74.6	70.3	62.4	56.0	50.9	46.8	NA	NA
	26	2,000	74.6	74.6	66.6	59.8	54.3	49.9	46.2	NA
	30	0	74.6	74.6	70.5	63.3	57.4	52.6	48.7	45.3
20	5	15,000	51.7	NA	NA	NA	NA	NA	NA	NA
	7	14,000	54.7	47.6	NA	NA	NA	NA	NA	NA
	11	12,000	60.2	52.3	46.4	NA	NA	NA	NA	NA
	15	10,000	64.4	56.0	49.7	NA	NA	NA	NA	NA
	19	8,000	69.0	60.1	53.2	47.9	NA	NA	NA	NA
	23	6,000	74.0	64.4	57.1	51.3	46.8	NA	NA	NA
	27	4,000	74.6	68.8	61.0	54.8	49.9	45.9	NA	NA
	31	2,000	74.6	72.8	64.6	58.0	52.7	48.5	NA	NA
	35	0	74.6	74.6	67.6	60.8	55.1	50.6	46.9	NA
25	10	15,000	50.7	NA	NA	NA	NA	NA	NA	NA
	12	14,000	53.7	46.8	NA	NA	NA	NA	NA	NA
	16	12,000	58.8	51.2	45.4	NA	NA	NA	NA	NA
	20	10,000	63.0	54.8	48.6	NA	NA	NA	NA	NA
	24	8,000	67.6	58.8	52.2	47.0	NA	NA	NA	NA
	28	6,000	72.2	62.9	55.8	50.2	45.8	NA	NA	NA
	32	4,000	74.6	66.7	59.2	53.2	48.5	NA	NA	NA
	36	2,000	74.6	69.6	61.8	55.5	50.6	46.5	NA	NA
	40	0	74.6	72.6	64.4	57.9	52.7	48.4	NA	NA
30	15	15,000	48.9	NA	NA	NA	NA	NA	NA	NA
	17	14,000	52.1	45.4	NA	NA	NA	NA	NA	NA
	21	12,000	57.5	50.0	NA	NA	NA	NA	NA	NA
	25	10,000	61.7	53.7	47.7	NA	NA	NA	NA	NA
	29	8,000	65.8	57.3	50.8	45.8	NA	NA	NA	NA
	33	6,000	69.6	60.7	53.8	48.5	NA	NA	NA	NA
	37	4,000	72.8	63.5	56.4	50.8	46.3	NA	NA	NA
	41	2,000	74.6	66.2	58.8	53.0	48.3	NA	NA	NA
	45	0	74.6	69.0	61.2	55.0	50.2	46.1	NA	NA

NOTES:
1. Maximum climb weights are limited by the design MAX TOGW of 74,600 lb for the GIV-SP and 73,200 for the GIV.
2. Increase MAX TOGW by 300 lb for each 10 knots of headwind up to a maximum of 40 knots. Data not valid for tailwinds.
3. Cowl anti-ice bleeds are assumed ON for temperatures below 10° C; wing anti-ice bleeds prohibited.

Non-SP GIV Climb Limited Weights, Flaps 10°, Standard Instrument Departure, ctd… GIV-OIS-7

GIV TAKEOFF GROSS WEIGHT LIMITED BY REQUIRED SID CLIMB GRADIENT

4000 FT AGL, FLAPS 10, ONE ENGINE OPERATING

DELTA ISA TEMP (DEG C)	AIRPORT AMBIENT TEMP (DEG C)	AIRPORT PRESS ALTITUDE (FT)	TAKEOFF GROSS WEIGHT (1000 LB)							
			REQUIRED SID CLIMB GRADIENT (FT/NM)							
			200	300	400	500	600	700	800	900
≤ -5	≤ -20	15,000	57.3	49.8	NA	NA	NA	NA	NA	NA
	≤ -18	14,000	59.3	51.6	45.7	NA	NA	NA	NA	NA
	≤ -14	12,000	63.7	55.4	49.1	NA	NA	NA	NA	NA
	≤ -10	10,000	68.3	59.5	52.7	47.4	NA	NA	NA	NA
	≤ -6	8,000	73.1	63.7	56.5	50.7	46.2	NA	NA	NA
	≤ -2	6,000	74.6	68.1	60.4	54.2	49.3	45.4	NA	NA
	≤ 2	4,000	74.6	72.7	64.5	57.9	52.6	48.4	NA	NA
	≤ 6	2,000	74.6	74.6	67.8	60.9	55.3	50.8	47.1	NA
	≤ 10	0	74.6	74.6	71.6	64.4	58.4	53.5	49.4	45.9
0	-15	15,000	56.8	49.4	NA	NA	NA	NA	NA	NA
	-13	14,000	58.8	51.1	45.3	NA	NA	NA	NA	NA
	-9	12,000	63.2	55.0	48.7	NA	NA	NA	NA	NA
	-5	10,000	67.7	59.0	52.3	47.1	NA	NA	NA	NA
	-1	8,000	72.6	63.2	56.0	50.4	45.9	NA	NA	NA
	3	6,000	74.6	67.6	60.0	53.9	49.0	45.1	NA	NA
	7	4,000	74.6	72.2	64.1	57.6	52.3	48.1	NA	NA
	11	2,000	74.6	74.6	68.2	61.3	55.6	51.0	47.3	NA
	15	0	74.6	74.6	71.4	64.2	58.2	53.4	49.3	45.9
5	-10	15,000	56.0	48.7	NA	NA	NA	NA	NA	NA
	-8	14,000	57.9	50.4	NA	NA	NA	NA	NA	NA
	-4	12,000	62.6	54.5	48.3	NA	NA	NA	NA	NA
	0	10,000	67.0	58.4	51.7	46.6	NA	NA	NA	NA
	4	8,000	71.7	62.5	55.4	49.8	45.4	NA	NA	NA
	8	6,000	74.6	66.8	59.2	53.2	48.4	NA	NA	NA
	12	4,000	74.6	72.0	63.8	57.4	52.1	47.9	NA	NA
	16	2,000	74.6	74.6	67.5	60.6	55.0	50.6	46.8	NA
	20	0	74.6	74.6	71.0	63.8	57.9	53.1	49.1	45.8
10	-5	15,000	54.5	47.5	NA	NA	NA	NA	NA	NA
	-3	14,000	56.4	49.0	NA	NA	NA	NA	NA	NA
	1	12,000	61.4	53.4	47.4	NA	NA	NA	NA	NA
	5	10,000	65.7	57.2	50.7	45.7	NA	NA	NA	NA
	9	8,000	70.2	61.2	54.3	48.8	NA	NA	NA	NA
	13	6,000	74.6	66.1	58.6	52.7	48.0	NA	NA	NA
	17	4,000	74.6	70.7	62.7	56.3	51.2	47.1	NA	NA
	21	2,000	74.6	74.6	66.6	59.9	54.3	49.9	46.3	NA
	25	0	74.6	74.6	70.4	63.3	57.4	52.6	48.7	45.4

NOTES:

1. Maximum climb weights are limited by the design MAX TOGW of 74,600 lb for the GIV-SP and 73,200 for the GIV.
2. Increase MAX TOGW by 300 lb for each 10 knots of headwind up to a maximum of 40 knots. Data not valid for tailwinds.
3. Cowl anti-ice bleeds are assumed ON for temperatures below 10° C; wing anti-ice bleeds prohibited.

Non-SP GIV Climb Limited Weights, Flaps 10°, Standard Instrument Departure, ctd… GIV-OIS-7

GIV TAKEOFF GROSS WEIGHT LIMITED BY REQUIRED SID CLIMB GRADIENT

4000 FT AGL, FLAPS 10, ONE ENGINE OPERATING, ctd…

DELTA ISA TEMP (DEG C)	AIRPORT AMBIENT TEMP (DEG C)	AIRPORT PRESS ALTITUDE (FT)	TAKEOFF GROSS WEIGHT (1000 LB)							
			REQUIRED SID CLIMB GRADIENT (FT/NM)							
			200	300	400	500	600	700	800	900
15	0	15,000	52.9	46.1	NA	NA	NA	NA	NA	NA
	2	14,000	54.6	47.6	NA	NA	NA	NA	NA	NA
	6	12,000	60.1	52.3	46.4	NA	NA	NA	NA	NA
	10	10,000	64.8	56.5	50.1	45.1	NA	NA	NA	NA
	14	8,000	69.4	60.5	53.6	48.3	NA	NA	NA	NA
	18	6,000	74.3	64.8	57.5	51.7	47.1	NA	NA	NA
	22	4,000	74.6	69.3	61.5	55.3	50.3	46.3	NA	NA
	26	2,000	74.6	74.0	65.7	59.1	53.7	49.3	45.7	NA
	30	0	74.6	74.6	69.6	62.6	56.8	52.1	48.2	NA
20	5	15,000	51.2	NA	NA	NA	NA	NA	NA	NA
	7	14,000	52.8	46.0	NA	NA	NA	NA	NA	NA
	11	12,000	59.2	51.6	45.8	NA	NA	NA	NA	NA
	15	10,000	63.4	55.3	49.1	NA	NA	NA	NA	NA
	19	8,000	67.9	59.2	52.5	47.3	NA	NA	NA	NA
	23	6,000	72.8	63.5	56.3	50.7	46.2	NA	NA	NA
	27	4,000	74.6	67.8	60.2	54.1	49.3	45.3	NA	NA
	31	2,000	74.6	71.8	63.7	57.3	52.1	48.0	NA	NA
	35	0	74.6	74.6	67.1	60.3	54.8	50.3	46.6	NA
25	10	15,000	50.2	NA	NA	NA	NA	NA	NA	NA
	12	14,000	51.8	45.1	NA	NA	NA	NA	NA	NA
	16	12,000	57.9	50.4	NA	NA	NA	NA	NA	NA
	20	10,000	62.0	54.1	48.0	NA	NA	NA	NA	NA
	24	8,000	66.6	58.0	51.5	46.4	NA	NA	NA	NA
	28	6,000	71.1	62.0	55.0	49.6	45.2	NA	NA	NA
	32	4,000	74.6	65.7	58.3	52.5	47.9	NA	NA	NA
	36	2,000	74.6	69.0	61.3	55.1	50.3	46.3	NA	NA
	40	0	74.6	72.0	64.0	57.5	52.4	48.2	NA	NA
30	15	15,000	48.4	NA	NA	NA	NA	NA	NA	NA
	17	14,000	49.9	NA	NA	NA	NA	NA	NA	NA
	21	12,000	56.6	49.3	NA	NA	NA	NA	NA	NA
	25	10,000	60.7	52.9	47.0	NA	NA	NA	NA	NA
	29	8,000	64.8	56.5	50.1	45.2	NA	NA	NA	NA
	33	6,000	68.7	59.9	53.2	48.0	NA	NA	NA	NA
	37	4,000	72.1	63.0	55.9	50.4	46.0	NA	NA	NA
	41	2,000	74.6	65.7	58.4	52.6	48.0	NA	NA	NA
	45	0	74.6	68.5	60.8	54.7	49.9	45.9	NA	NA

NOTES:
1. Maximum climb weights are limited by the design MAX TOGW of 74,600 lb for the GIV-SP and 73,200 for the GIV.
2. Increase MAX TOGW by 300 lb for each 10 knots of headwind up to a maximum of 40 knots. Data not valid for tailwinds.
3. Cowl anti-ice bleeds are assumed ON for temperatures below 10° C; wing anti-ice bleeds prohibited.

Non-SP GIV Climb Limited Weights, Flaps 10°, Standard Instrument Departure, ctd… GIV-OIS-7

GIV TAKEOFF GROSS WEIGHT LIMITED BY REQUIRED SID CLIMB GRADIENT

5000 FT AGL, FLAPS 10, ONE ENGINE OPERATING

DELTA ISA TEMP (DEG C)	AIRPORT AMBIENT TEMP (DEG C)	AIRPORT PRESS ALTITUDE (FT)	TAKEOFF GROSS WEIGHT (1000 LB) REQUIRED SID CLIMB GRADIENT (FT/NM)							
			200	300	400	500	600	700	800	900
	≤ -20	15,000	56.3	49.0	NA	NA	NA	NA	NA	NA
	≤ -18	14,000	58.4	50.8	NA	NA	NA	NA	NA	NA
	≤ -14	12,000	62.6	54.5	48.3	NA	NA	NA	NA	NA
	≤ -10	10,000	67.1	58.5	51.8	46.7	NA	NA	NA	NA
≤ -5	≤ -6	8,000	71.9	62.6	55.5	49.9	45.5	NA	NA	NA
	≤ -2	6,000	74.6	67.0	59.4	53.4	48.6	NA	NA	NA
	≤ 2	4,000	74.6	71.6	63.5	57.0	51.9	47.7	NA	NA
	≤ 6	2,000	74.6	74.6	66.7	60.0	54.4	50.0	46.4	NA
	≤ 10	0	74.6	74.6	70.5	63.4	57.5	52.7	48.8	45.4
	-15	15,000	56.1	48.8	NA	NA	NA	NA	NA	NA
	-13	14,000	57.9	50.4	NA	NA	NA	NA	NA	NA
	-9	12,000	62.1	54.0	47.9	NA	NA	NA	NA	NA
	-5	10,000	66.6	58.0	51.4	46.3	NA	NA	NA	NA
0	-1	8,000	71.4	62.2	55.1	49.6	45.2	NA	NA	NA
	3	6,000	74.6	66.5	59.0	53.0	48.3	NA	NA	NA
	7	4,000	74.6	71.1	63.0	56.6	51.5	47.4	NA	NA
	11	2,000	74.6	74.6	67.1	60.3	54.7	50.2	46.6	NA
	15	0	74.6	74.6	70.3	63.1	57.3	52.5	48.6	45.3
	-10	15,000	55.3	48.1	NA	NA	NA	NA	NA	NA
	-8	14,000	57.1	49.7	NA	NA	NA	NA	NA	NA
	-4	12,000	61.4	53.4	47.4	NA	NA	NA	NA	NA
	0	10,000	65.9	57.4	50.9	45.8	NA	NA	NA	NA
5	4	8,000	70.5	61.4	54.5	49.0	NA	NA	NA	NA
	8	6,000	74.6	65.7	58.3	52.4	47.7	NA	NA	NA
	12	4,000	74.6	70.9	62.9	56.5	51.4	47.2	NA	NA
	16	2,000	74.6	74.6	66.4	59.7	54.2	49.8	46.1	NA
	20	0	74.6	74.6	69.9	62.8	57.0	52.3	48.4	45.1
	-5	15,000	53.8	46.8	NA	NA	NA	NA	NA	NA
	-3	14,000	55.6	48.4	NA	NA	NA	NA	NA	NA
	1	12,000	59.9	52.2	46.3	NA	NA	NA	NA	NA
	5	10,000	64.6	56.3	49.9	NA	NA	NA	NA	NA
10	9	8,000	69.2	60.3	53.4	48.1	NA	NA	NA	NA
	13	6,000	74.6	65.0	57.7	51.8	47.2	NA	NA	NA
	17	4,000	74.6	69.5	61.7	55.4	50.4	46.4	NA	NA
	21	2,000	74.6	73.8	65.5	58.9	53.5	49.2	45.5	NA
	25	0	74.6	74.6	69.3	62.3	56.5	51.9	48.0	NA

NOTES:

1. Maximum climb weights are limited by the design MAX TOGW of 74,600 lb for the GIV-SP and 73,200 for the GIV.
2. Increase MAX TOGW by 300 lb for each 10 knots of headwind up to a maximum of 40 knots. Data not valid for tailwinds.
3. Cowl anti-ice bleeds are assumed ON for temperatures below 10° C; wing anti-ice bleeds prohibited.

Non-SP GIV Climb Limited Weights, Flaps 10°, Standard Instrument Departure, ctd… GIV-OIS-7

GIV TAKEOFF GROSS WEIGHT LIMITED BY REQUIRED SID CLIMB GRADIENT

5000 FT AGL, FLAPS 10, ONE ENGINE OPERATING, ctd…

DELTA ISA TEMP (DEG C)	AIRPORT AMBIENT TEMP (DEG C)	AIRPORT PRESS ALTITUDE (FT)	TAKEOFF GROSS WEIGHT (1000 LB)							
			REQUIRED SID CLIMB GRADIENT (FT/NM)							
			200	300	400	500	600	700	800	900
15	0	15,000	52.3	45.5	NA	NA	NA	NA	NA	NA
	2	14,000	53.9	47.0	NA	NA	NA	NA	NA	NA
	6	12,000	58.4	50.8	45.1	NA	NA	NA	NA	NA
	10	10,000	63.8	55.6	49.3	NA	NA	NA	NA	NA
	14	8,000	68.3	59.5	52.8	47.5	NA	NA	NA	NA
	18	6,000	73.1	63.7	56.5	50.8	46.4	NA	NA	NA
	22	4,000	74.6	68.2	60.5	54.4	49.5	45.6	NA	NA
	26	2,000	74.6	72.8	64.6	58.1	52.8	48.6	NA	NA
	30	0	74.6	74.6	68.6	61.6	55.9	51.3	47.6	NA
20	5	15,000	50.6	NA	NA	NA	NA	NA	NA	NA
	7	14,000	52.2	45.4	NA	NA	NA	NA	NA	NA
	11	12,000	57.5	50.0	NA	NA	NA	NA	NA	NA
	15	10,000	62.4	54.4	48.3	NA	NA	NA	NA	NA
	19	8,000	66.8	58.3	51.7	46.6	NA	NA	NA	NA
	23	6,000	71.7	62.5	55.4	49.9	45.5	NA	NA	NA
	27	4,000	74.6	66.7	59.2	53.2	48.5	NA	NA	NA
	31	2,000	74.6	70.6	62.7	56.3	51.3	47.2	NA	NA
	35	0	74.6	74.6	66.2	59.6	54.1	49.7	46.1	NA
25	10	15,000	49.6	NA	NA	NA	NA	NA	NA	NA
	12	14,000	51.2	NA	NA	NA	NA	NA	NA	NA
	16	12,000	55.9	48.7	NA	NA	NA	NA	NA	NA
	20	10,000	61.0	53.2	47.3	NA	NA	NA	NA	NA
	24	8,000	65.4	57.0	50.6	45.7	NA	NA	NA	NA
	28	6,000	70.0	61.0	54.2	48.8	NA	NA	NA	NA
	32	4,000	73.9	64.5	57.2	51.6	47.0	NA	NA	NA
	36	2,000	74.6	68.2	60.6	54.5	49.7	45.7	NA	NA
	40	0	74.6	71.3	63.3	56.9	51.8	47.7	NA	NA
30	15	15,000	47.9	NA	NA	NA	NA	NA	NA	NA
	17	14,000	49.4	NA	NA	NA	NA	NA	NA	NA
	21	12,000	54.3	47.3	NA	NA	NA	NA	NA	NA
	25	10,000	59.7	52.0	46.3	NA	NA	NA	NA	NA
	29	8,000	63.7	55.6	49.4	NA	NA	NA	NA	NA
	33	6,000	67.5	58.9	52.3	47.2	NA	NA	NA	NA
	37	4,000	71.1	62.1	55.1	49.7	45.4	NA	NA	NA
	41	2,000	74.4	65.0	57.7	52.0	47.5	NA	NA	NA
	45	0	74.6	67.8	60.2	54.2	49.5	45.5	NA	NA

NOTES:
1. Maximum climb weights are limited by the design MAX TOGW of 74,600 lb for the GIV-SP and 73,200 for the GIV.
2. Increase MAX TOGW by 300 lb for each 10 knots of headwind up to a maximum of 40 knots. Data not valid for tailwinds.
3. Cowl anti-ice bleeds are assumed ON for temperatures below 10° C; wing anti-ice bleeds prohibited.

Non-SP GIV Climb Limited Weights, Flaps 10°, Standard Instrument Departure, ctd… GIV-OIS-7

GIV TAKEOFF GROSS WEIGHT LIMITED BY REQUIRED SID CLIMB GRADIENT

6000 FT AGL, FLAPS 10, ONE ENGINE OPERATING

DELTA ISA TEMP (DEG C)	AIRPORT AMBIENT TEMP (DEG C)	AIRPORT PRESS ALTITUDE (FT)	TAKEOFF GROSS WEIGHT (1000 LB) REQUIRED SID CLIMB GRADIENT (FT/NM) 200	300	400	500	600	700	800	900
≤ -5	≤ -20	15,000	54.3	48.2	NA	NA	NA	NA	NA	NA
	≤ -18	14,000	56.3	50.0	NA	NA	NA	NA	NA	NA
	≤ -14	12,000	60.2	53.6	47.5	NA	NA	NA	NA	NA
	≤ -10	10,000	64.3	57.5	51.0	45.9	NA	NA	NA	NA
	≤ -6	8,000	68.7	61.6	54.6	49.1	NA	NA	NA	NA
	≤ -2	6,000	73.2	65.9	58.5	52.5	47.8	NA	NA	NA
	≤ 2	4,000	74.6	70.5	62.5	56.1	51.0	47.0	NA	NA
	≤ 6	2,000	74.6	74.0	65.7	59.0	53.6	49.3	45.7	NA
	≤ 10	0	74.6	74.6	69.3	62.3	56.5	51.9	48.0	NA
0	-15	15,000	54.1	47.8	NA	NA	NA	NA	NA	NA
	-13	14,000	56.2	49.7	NA	NA	NA	NA	NA	NA
	-9	12,000	59.8	53.1	47.1	NA	NA	NA	NA	NA
	-5	10,000	63.9	57.0	50.6	45.5	NA	NA	NA	NA
	-1	8,000	68.3	61.2	54.2	48.8	NA	NA	NA	NA
	3	6,000	72.9	65.5	58.1	52.2	47.5	NA	NA	NA
	7	4,000	74.6	70.0	62.1	55.7	50.7	46.7	NA	NA
	11	2,000	74.6	74.4	66.0	59.3	53.9	49.5	45.9	NA
	15	0	74.6	74.6	69.1	62.1	56.4	51.7	47.9	NA
5	-10	15,000	53.6	47.3	NA	NA	NA	NA	NA	NA
	-8	14,000	55.4	49.1	NA	NA	NA	NA	NA	NA
	-4	12,000	58.9	52.3	46.4	NA	NA	NA	NA	NA
	0	10,000	63.3	56.4	50.0	45.1	NA	NA	NA	NA
	4	8,000	67.6	60.5	53.6	48.3	NA	NA	NA	NA
	8	6,000	72.2	64.7	57.4	51.6	47.0	NA	NA	NA
	12	4,000	74.6	69.8	61.9	55.6	50.6	46.5	NA	NA
	16	2,000	74.6	73.6	65.3	58.7	53.3	49.0	45.4	NA
	20	0	74.6	74.6	68.8	61.8	56.1	51.5	47.7	NA
10	-5	15,000	52.2	46.2	NA	NA	NA	NA	NA	NA
	-3	14,000	53.9	47.8	NA	NA	NA	NA	NA	NA
	1	12,000	57.2	50.9	45.2	NA	NA	NA	NA	NA
	5	10,000	62.1	55.4	49.1	NA	NA	NA	NA	NA
	9	8,000	66.3	59.3	52.6	47.4	NA	NA	NA	NA
	13	6,000	71.5	64.0	56.8	51.0	46.5	NA	NA	NA
	17	4,000	74.6	68.5	60.7	54.6	49.7	45.7	NA	NA
	21	2,000	74.6	72.6	64.4	57.9	52.7	48.4	NA	NA
	25	0	74.6	74.6	68.2	61.3	55.6	51.0	47.3	NA

NOTES:

1. Maximum climb weights are limited by the design MAX TOGW of 74,600 lb for the GIV-SP and 73,200 for the GIV.
2. Increase MAX TOGW by 300 lb for each 10 knots of headwind up to a maximum of 40 knots. Data not valid for tailwinds.
3. Cowl anti-ice bleeds are assumed ON for temperatures below 10° C; wing anti-ice bleeds prohibited.

Non-SP GIV Climb Limited Weights, Flaps 10°, Standard Instrument Departure, ctd… GIV-OIS-7

GIV TAKEOFF GROSS WEIGHT LIMITED BY REQUIRED SID CLIMB GRADIENT

6000 FT AGL, FLAPS 10, ONE ENGINE OPERATING, ctd…

DELTA ISA TEMP (DEG C)	AIRPORT AMBIENT TEMP (DEG C)	AIRPORT PRESS ALTITUDE (FT)	TAKEOFF GROSS WEIGHT (1000 LB) REQUIRED SID CLIMB GRADIENT (FT/NM) 200	300	400	500	600	700	800	900
15	0	15,000	50.6	NA	NA	NA	NA	NA	NA	NA
	2	14,000	52.2	46.4	NA	NA	NA	NA	NA	NA
	6	12,000	55.3	49.4	NA	NA	NA	NA	NA	NA
	10	10,000	61.4	54.7	48.5	NA	NA	NA	NA	NA
	14	8,000	65.5	58.6	51.9	46.8	NA	NA	NA	NA
	18	6,000	70.0	62.8	55.7	50.0	45.7	NA	NA	NA
	22	4,000	74.6	67.1	59.5	53.5	48.8	NA	NA	NA
	26	2,000	74.6	71.6	63.5	57.1	52.0	47.8	NA	NA
	30	0	74.6	74.6	67.5	60.6	55.0	50.5	46.8	NA
20	5	15,000	48.9	NA	NA	NA	NA	NA	NA	NA
	7	14,000	50.4	NA	NA	NA	NA	NA	NA	NA
	11	12,000	54.4	48.6	NA	NA	NA	NA	NA	NA
	15	10,000	60.0	53.5	47.5	NA	NA	NA	NA	NA
	19	8,000	64.1	57.4	50.9	45.9	NA	NA	NA	NA
	23	6,000	68.5	61.5	54.5	49.1	NA	NA	NA	NA
	27	4,000	72.8	65.6	58.2	52.4	47.8	NA	NA	NA
	31	2,000	74.6	69.4	61.6	55.4	50.5	46.5	NA	NA
	35	0	74.6	73.4	65.2	58.6	53.3	49.0	45.4	NA
25	10	15,000	48.1	NA	NA	NA	NA	NA	NA	NA
	12	14,000	49.5	NA	NA	NA	NA	NA	NA	NA
	16	12,000	52.4	46.9	NA	NA	NA	NA	NA	NA
	20	10,000	58.6	52.3	46.5	NA	NA	NA	NA	NA
	24	8,000	62.7	56.1	49.8	NA	NA	NA	NA	NA
	28	6,000	66.9	60.1	53.3	48.1	NA	NA	NA	NA
	32	4,000	70.2	63.5	56.3	50.7	46.3	NA	NA	NA
	36	2,000	73.8	67.0	59.5	53.6	48.9	NA	NA	NA
	40	0	74.6	70.5	62.6	56.3	51.3	47.2	NA	NA
30	15	15,000	46.3	NA	NA	NA	NA	NA	NA	NA
	17	14,000	47.7	NA	NA	NA	NA	NA	NA	NA
	21	12,000	50.4	45.4	NA	NA	NA	NA	NA	NA
	25	10,000	57.2	51.2	45.5	NA	NA	NA	NA	NA
	29	8,000	60.9	54.7	48.6	NA	NA	NA	NA	NA
	33	6,000	64.2	58.0	51.5	46.5	NA	NA	NA	NA
	37	4,000	67.4	61.2	54.4	49.1	NA	NA	NA	NA
	41	2,000	70.4	64.2	57.0	51.5	47.0	NA	NA	NA
	45	0	73.3	67.1	59.6	53.7	49.0	45.0	NA	NA

NOTES:
1. Maximum climb weights are limited by the design MAX TOGW of 74,600 lb for the GIV-SP and 73,200 for the GIV.
2. Increase MAX TOGW by 300 lb for each 10 knots of headwind up to a maximum of 40 knots. Data not valid for tailwinds.
3. Cowl anti-ice bleeds are assumed ON for temperatures below 10° C; wing anti-ice bleeds prohibited.

Non-SP SID Climb Performance Conversion Table

OM 11-04-40

Departure climb requirements are sometimes expressed in units of degrees and percent climb gradient as well as Ft/NM which is shown on the SID climb tables. Provided below is a table which can be used to convert climb requirements in degrees or percent to Ft/NM.

NOTE: Per FAA Terminal Instrument Procedures (TERPs) criteria, SIDs specified at U.S. civilian airports will ensure that any limiting obstacles will be cleared by a margin of climb of 48 Ft/NM (0.8% or 0.5 deg). If a departure climb is specified at a military airport or non-US airport, it is important to determine if the specified climb requirement provides at least the same obstacle clearance margin. If uncertainty exists on this point, add 48 Ft/NM, 0.8% or 0.5 deg to the stated climb requirement before entering the SID climb tables to determine a maximum allowable takeoff weight.

Deg	%	Ft/NM	Deg	%	Ft/NM
1.0	1.7	106	5.0	8.7	532
1.2	2.1	127	5.2	9.1	553
1.4	2.4	148	5.4	9.5	574
1.6	2.8	170	5.6	9.8	596
1.8	3.1	191	5.8	10.2	617
2.0	3.5	212	6.0	10.5	639
2.2	3.8	233	6.2	10.9	660
2.4	4.2	255	6.4	11.2	682
2.6	4.5	276	6.6	11.6	703
2.8	4.9	297	6.8	11.9	725
3.0	5.2	318	7.0	12.3	746
3.2	5.6	340	7.2	12.6	768
3.4	5.9	361	7.4	13.0	789
3.6	6.3	382	7.6	13.3	811
3.8	6.6	404	7.8	13.7	832
4.0	7.0	425	8.0	14.1	854
4.2	7.3	446	8.2	14.4	876
4.4	7.7	468	8.4	14.8	897
4.6	8.0	489	8.6	15.1	919
4.8	8.4	510	8.8	15.5	941

Non-SP GIV Twin Engine Cruise Altitudes: Mach 0.77

CCM

		GROSS WEIGHT - 1000 LB									
		74	70	66	62	58	54	50	46	42	38
ALT (FT)	Δ ISA CEILING				-20°C to 0°C			+20°C			
45000	NM/LB	****	****	****	****	.1721	.1857	.1982	.2101	.2218	.2326
	TWIND	****	****	****	****	3	0	0	0	0	0
43000	NM/LB	****	****	****	.1622	.1732	.1834	.1931	.2029	.2119	.2216
	TWIND	****	****	****	0	0	6	12	16	21	22
41000	NM/LB	****	.1439	.1534	.1621	.1704	.1781	.1864	.1938	.2019	.2089
	TWIND	****	2	0	1	7	19	28	37	43	50
39000	NM/LB	.1372	.1447	.1518	.1584	.1652	.1716	.1777	.1845	.1904	.1958
	TWIND	0	0	5	11	21	36	51	61	73	83
37000	NM/LB	.1365	.1421	.1478	.1532	.1584	.1634	.1691	.1740	.1784	.1821
	TWIND	2	8	17	26	41	60	76	92	107	122
35000	NM/LB	.1329	.1376	.1420	.1462	.1510	.1552	.1591	.1628	.1664	.1687
	TWIND	14	23	36	49	65	87	109	129	148	168
33000	NM/LB	.1276	.1311	.1351	.1385	.1418	.1450	.1486	.1510	.1529	****
	TWIND	34	41	61	77	99	126	150	175	202	****
31000	NM/LB	.1219	.1247	.1275	.1309	.1335	.1358	****	****	****	****
	TWIND	57	72	92	108	134	166	****	****	****	****
29000	NM/LB	.1162	.1185	.1208	.1234	.1253	****	****	****	****	****
	TWIND	82	101	123	143	174	****	****	****	****	****
27000	NM/LB	.1092	.1110	.1127	.1142	****	****	****	****	****	****
	TWIND	118	140	166	193	****	****	****	****	****	****
25000	NM/LB	.1030	.1043	****	****	****	****	****	****	****	****
	TWIND	154	179	****	****	****	****	****	****	****	****

NOTES:

1. Values at optimum altitude are shaded.
2. Service Ceilings (100 FPM rate of climb) for selected temperature conditions are represented on the table by bold lines.
3. Tailwind Factors (TWIND) are the difference in flight level wind required to equal ground specific range at optimum altitude.

Non-SP GIV Twin Engine Cruise Altitudes: Mach 0.80

CCM

		GROSS WEIGHT - 1000 LB									
		74	70	66	62	58	54	50	46	42	38
ALT (FT)	Δ ISA CEILING				-20°C to 0°C					+20°C	
45000	NM/LB	****	****	****	****	.1694	.1816	.1919	.2023	.2126	.2212
	TWIND	****	****	****	****	0	0	0	0	0	0
43000	NM/LB	****	****	****	.1592	.1688	.1773	.1858	.1944	.2015	.2093
	TWIND	****	****	****	0	2	11	15	19	25	26
41000	NM/LB	****	.1415	.1498	.1572	.1644	.1711	.1783	.1841	.1907	.1962
	TWIND	****	0	0	6	14	28	35	45	53	58
39000	NM/LB	.1344	.1407	.1468	.1526	.1587	.1639	.1687	.1742	.1788	.1831
	TWIND	0	3	9	20	31	50	63	74	87	95
37000	NM/LB	.1321	.1370	.1422	.1467	.1509	.1549	.1595	.1633	.1668	.1697
	TWIND	8	15	24	39	56	79	93	110	126	139
35000	NM/LB	.1278	.1321	.1356	.1390	.1429	.1461	.1493	.1522	.1548	.1565
	TWIND	24	33	48	67	85	112	132	152	172	191
33000	NM/LB	.1220	.1249	.1281	.1309	.1336	.1362	.1388	****	****	****
	TWIND	47	62	79	101	125	155	178	****	****	****
31000	NM/LB	.1158	.1182	.1206	.1231	.1252	****	****	****	****	****
	TWIND	75	92	114	138	166	****	****	****	****	****
29000	NM/LB	.1097	.1116	.1134	.1154	****	****	****	****	****	****
	TWIND	107	127	152	180	****	****	****	****	****	****
27000	NM/LB	.1031	.1047	****	****	****	****	****	****	****	****
	TWIND	145	168	****	****	****	****	****	****	****	****
25000	NM/LB	.0971	****	****	****	****	****	****	****	****	****
	TWIND	185	****	****	****	****	****	****	****	****	****

NOTES:

1. Values at optimum altitude are shaded.
2. Service Ceilings (100 FPM rate of climb) for selected temperature conditions are represented on the table by bold lines.
3. Tailwind Factors (TWIND) are the difference in flight level wind required to equal ground specific range at optimum altitude.

Non-SP GIV Twin Engine Cruise Altitudes: Mach 0.83

CCM

		GROSS WEIGHT - 1000 LB									
		74	70	66	62	58	54	50	46	42	38
ALT (FT)	Δ ISA CEILING						-20°C to 0°C			+15°C	
45000	NM/LB	****	****	****	****	****	****	.1708	.1820	.1911	.1992
	TWIND	****	****	****	****	****	****	0	0	0	0
43000	NM/LB	****	****	****	****	.1474	.1581	.1674	.1746	.1814	.1871
	TWIND	****	****	****	****	0	0	10	20	25	31
41000	NM/LB	****	****	****	.1390	.1471	.1546	.1602	.1657	.1705	.1754
	TWIND	****	****	****	0	1	11	31	47	57	65
39000	NM/LB	****	.1234	.1307	.1370	.1424	.1472	.1518	.1557	.1599	.1637
	TWIND	****	0	0	7	17	35	60	80	93	103
37000	NM/LB	.1173	.1227	.1273	.1318	.1356	.1395	.1425	.1459	.1492	.1519
	TWIND	0	3	13	26	41	63	94	118	134	148
35000	NM/LB	.1149	.1185	.1218	.1250	.1277	.1305	.1334	.1360	.1376	.1393
	TWIND	10	20	35	54	73	101	134	162	186	206
33000	NM/LB	.1104	.1132	.1152	.1178	.1202	.1228	.1240	****	****	****
	TWIND	30	43	65	87	109	139	182	****	****	****
31000	NM/LB	.1051	.1075	.1098	.1108	.1129	.1147	****	****	****	****
	TWIND	57	72	93	124	149	184	****	****	****	****
29000	NM/LB	.0987	.1004	.1022	.1031	.1045	****	****	****	****	****
	TWIND	93	113	132	171	201	****	****	****	****	****
27000	NM/LB	.0942	.0957	.0973	****	****	****	****	****	****	****
	TWIND	122	143	170	****	****	****	****	****	****	****
25000	NM/LB	****	****	****	****	****	****	****	****	****	****
	TWIND	****	****	****	****	****	****	****	****	****	****

NOTES:
1. Values at optimum altitude are shaded.
2. Service Ceilings (100 FPM rate of climb) for selected temperature conditions are represented on the table by bold lines.
3. Tailwind Factors (TWIND) are the difference in flight level wind required to equal ground specific range at optimum altitude.

Non-SP GIV Maximum Range Cruise - ISA

CCM

ALT (FT)	OAT (°C)		GROSS WEIGHT - 1000 LB									
			76	74	72	70	68	66	64	62	60	58
45000		MT	****	****	****	****	****	****	****	****	****	0.778
	-56.5	KCAS	****	****	****	****	****	****	****	****	****	209
		FF	****	****	****	****	****	****	****	****	****	2590
		NAM/LB	****	****	****	****	****	****	****	****	****	.1727
43000		MT	****	****	****	****	****	****	0.779	0.774	0.775	0.771
	-56.5	KCAS	****	****	****	****	****	****	219	218	218	217
		FF	****	****	****	****	****	****	2850	2730	2650	2550
		NAM/LB	****	****	****	****	****	****	.1570	.1625	.1680	.1731
41000		MT	****	****	****	0.781	0.778	0.775	0.771	0.766	0.761	0.757
	-56.5	KCAS	****	****	****	230	229	228	227	225	224	222
		FF	****	****	****	3110	3010	2900	2800	2710	2620	2540
		NAM/LB	****	****	****	.1441	.1484	.1535	.1577	.1622	.1665	.1708
39000		MT	0.776	0.774	0.771	0.767	0.764	0.761	0.757	0.753	0.748	0.744
	-56.5	KCAS	239	239	238	237	236	234	233	232	230	229
		FF	3340	3240	3150	3040	2960	2870	2790	2710	2640	2570
		NAM/LB	.1333	.1372	.1407	.1448	.1483	.1520	.1555	.1591	.1627	.1662
37000		MT	0.768	0.763	0.760	0.758	0.752	0.752	0.748	0.743	0.737	0.733
	-56.5	KCAS	248	246	245	245	242	243	241	239	237	236
		FF	3290	3200	3120	3060	2960	2910	2830	2760	2680	2620
		NAM/LB	.1337	.1366	.1396	.1425	.1455	.1484	.1514	.1545	.1577	.1610
35000		MT	0.754	0.750	0.747	0.744	0.740	0.736	0.730	0.727	0.721	0.716
	-54.3	KCAS	255	253	252	251	250	248	246	245	243	241
		FF	3310	3240	3170	3100	3030	2950	2870	2810	2740	2670
		NAM/LB	.1311	.1336	.1360	.1385	.1411	.1438	.1465	.1492	.1521	.1548
33000		MT	0.737	0.733	0.729	0.724	0.719	0.713	0.707	0.701	0.693	0.684
	-50.4	KCAS	260	258	257	255	253	251	249	246	243	240
		FF	3370	3300	3220	3150	3080	3000	2920	2850	2770	2680
		NAM/LB	.1273	.1295	.1317	.1340	.1361	.1384	.1408	.1432	.1458	.1483
31000		MT	0.716	0.710	0.704	0.697	0.690	0.684	0.676	0.668	0.658	0.649
	-46.4	KCAS	264	261	259	256	253	251	248	244	241	237
		FF	3410	3320	3240	3160	3080	3000	2930	2850	2760	2678
		NAM/LB	.1234	.1254	.1274	.1294	.1315	.1336	.1357	.1376	.1399	.1422
29000		MT	0.706	0.697	0.687	0.678	0.668	0.657	0.647	0.637	0.625	0.613
	-42.5	KCAS	271	268	263	260	256	251	247	243	238	233
		FF	3520	3430	3330	3240	3140	3040	2960	2870	2770	2680
		NAM/LB	.1187	.1205	.1223	.1241	.1259	.1279	.1295	.1314	.1335	.1355
27000		MT	0.671	0.665	0.658	0.651	0.643	0.634	0.625	0.615	0.605	0.594
	-38.5	KCAS	268	265	263	260	256	252	249	244	240	236
		FF	3500	3420	3340	3260	3170	3090	3000	2910	2820	2730
		NAM/LB	.1144	.1160	.1176	.1193	.1209	.1227	.1244	.1262	.1281	.1300
25000		MT	0.648	0.641	0.634	0.626	0.617	0.608	0.599	0.590	0.580	0.570
	-34.5	KCAS	270	267	263	260	256	252	248	244	240	236
		FF	3540	3460	3380	3290	3200	3110	3030	2940	2850	2760
		NAM/LB	.1101	.1116	.1130	.1145	.1160	.1176	.1192	.1209	.1226	.1243
20000		MT	0.585	0.578	0.570	0.562	0.554	0.546	0.539	0.530	0.522	0.514
	-24.6	KCAS	268	265	261	257	254	250	246	242	238	234
		FF	3640	3560	3470	3380	3290	3200	3120	3030	2940	2860
		NAM/LB	.0986	.0998	.1010	.1022	.1035	.1048	.1062	.1076	.1090	.1105

NOTE: See the **GIV Operating Manual** or **GIV Cruise Control Manual** for procedures to account for temperature deviation from ISA day and/or wind conditions.

Non-SP GIV Maximum Range Cruise - ISA, ctd… CCM

ALT (FT)	OAT (°C)		GROSS WEIGHT - 1000 LB									
			56	54	52	50	48	46	44	42	40	38
45000		MT	0.776	0.774	0.769	0.767	0.762	0.757	0.750	0.744	0.734	0.725
	-56.5	KCAS	208	208	206	206	204	203	200	199	196	193
		FF	2490	2390	2300	2220	2140	2060	1980	1910	1830	1750
		NAM/LB	.1791	.1858	.1921	.1984	.2049	.2110	.2173	.2237	.2304	.2375
43000		MT	0.767	0.763	0.758	0.754	0.749	0.742	0.735	0.728	0.719	0.710
	-56.5	KCAS	216	214	213	211	210	208	206	203	201	198
		FF	2470	2390	2300	2230	2150	2080	2010	1930	1860	1790
		NAM/LB	.1787	.1837	.1891	.1942	.1994	.2048	.2104	.2163	.2224	.2282
41000		MT	0.754	0.749	0.744	0.739	0.733	0.727	0.720	0.712	0.702	0.693
	-56.5	KCAS	222	220	218	217	215	213	211	208	205	202
		FF	2470	2400	2330	2250	2180	2110	2040	1970	1890	1820
		NAM/LB	.1751	.1794	.1838	.1883	.1930	.1980	.2030	.2079	.2131	.2187
39000		MT	0.739	0.733	0.726	0.720	0.713	0.706	0.697	0.688	0.676	0.665
	-56.5	KCAS	227	225	223	221	218	216	213	210	206	202
		FF	2500	2420	2340	2270	2200	2130	2060	1980	1900	1830
		NAM/LB	.1700	.1738	.1779	.1820	.1860	.1902	.1946	.1992	.2039	.2086
37000		MT	0.727	0.721	0.713	0.705	0.696	0.686	0.674	0.662	0.646	0.630
	-56.5	KCAS	234	232	229	226	223	219	215	211	206	200
		FF	2540	2470	2390	2310	2240	2160	2080	2000	1910	1820
		NAM/LB	.1644	.1679	.1711	.1747	.1784	.1823	.1861	.1901	.1942	.1985
35000		MT	0.709	0.701	0.690	0.679	0.663	0.648	0.643	0.638	0.596	0.555
	-54.3	KCAS	238	235	231	227	222	216	214	212	198	183
		FF	2590	2510	2430	2350	2250	2150	2100	2050	1860	1700
		NAM/LB	.1578	.1608	.1639	.1671	.1704	.1737	.1771	.1801	.1848	.1888
33000		MT	0.675	0.664	0.650	0.635	0.617	0.600	0.583	0.566	0.550	0.535
	-50.4	KCAS	236	232	227	221	215	208	202	196	190	185
		FF	2600	2510	2420	2330	2220	2120	2020	1920	1821	1740
		NAM/LB	.1510	.1538	.1566	.1590	.1621	.1652	.1685	.1720	.1756	.1793
31000		MT	0.648	0.628	0.615	0.603	0.589	0.575	0.560	0.545	0.529	0.513
	-46.4	KCAS	237	229	224	219	214	209	203	197	191	185
		FF	2630	2510	2420	2330	2230	2140	2050	1960	1860	1770
		NAM/LB	.1446	.1470	.1496	.1522	.1550	.1578	.1608	.1639	.1672	.1705
29000		MT	0.600	0.586	0.572	0.558	0.545	0.532	0.519	0.506	0.496	0.485
	-42.5	KCAS	228	222	217	211	206	201	196	191	187	182
		FF	2580	2480	2380	2280	2190	2100	2010	1920	1850	1770
		NAM/LB	.1379	.1400	.1426	.1451	.1477	.1503	.1531	.1560	.1590	.1622
27000		MT	0.584	0.573	0.561	0.550	0.540	0.529	0.517	0.506	0.494	0.483
	-38.5	KCAS	231	227	222	217	213	208	204	199	194	190
		FF	2640	2550	2460	2370	2290	2200	2120	2040	1950	1870
		NAM/LB	.1320	.1341	.1363	.1385	.1408	.1432	.1457	.1483	.1510	.1538
25000		MT	0.560	0.550	0.539	0.529	0.519	0.509	0.499	0.488	0.478	0.467
	-34.5	KCAS	231	227	222	218	213	209	205	200	196	191
		FF	2670	2580	2500	2410	2330	2240	2160	2080	2000	1920
		NAM/LB	.1262	.1281	.1301	.1322	.1344	.1366	.1389	.1413	.1437	.1463
20000		MT	0.506	0.498	0.490	0.482	0.474	0.466	0.458	0.451	0.444	0.438
	-24.6	KCAS	231	227	223	219	216	212	208	205	202	199
		FF	2770	2690	2610	2530	2450	2370	2300	2230	2160	2100
		NAM/LB	.1121	.1137	.1153	.1170	.1188	.1206	.1224	.1242	.1261	.1279

NOTE: See the **GIV Operating Manual** or **GIV Cruise Control Manual** for procedures to account for temperature deviation from ISA day and/or wind conditions.

Non-SP GIV Long Range Cruise - ISA

CCM

ALT	OAT (°C)		GROSS WEIGHT - 1000 LB									
			76	74	72	70	68	66	64	62	60	58
45000		MT	****	****	****	****	****	****	****	****	****	0.795
	-56.5	KCAS	****	****	****	****	****	****	****	****	****	214
		FF	****	****	****	****	****	****	****	****	****	2670
		NAM/LB	****	****	****	****	****	****	****	****	****	0.1707
43000		MT	****	****	****	****	****	****	0.797	0.792	0.79	0.787
	-56.5	KCAS	****	****	****	****	****	****	225	223	223	222
		FF	****	****	****	****	****	****	2950	2820	2730	2630
		NAM/LB	****	****	****	****	****	****	0.1551	0.1611	0.1665	0.172
41000		MT	****	****	****	0.794	0.793	0.791	0.79	0.787	0.784	0.781
	-56.5	KCAS	****	****	****	235	234	234	233	232	231	230
		FF	****	****	****	3190	3090	2990	2900	2807	2730	2650
		NAM/LB	****	****	****	0.1428	0.1471	0.1521	0.1562	0.1606	0.1648	0.1691
39000		MT	0.792	0.791	0.789	0.788	0.786	0.784	0.781	0.779	0.778	0.775
	-56.5	KCAS	245	245	244	244	243	242	241	241	240	239
		FF	3440	3330	3240	3150	3070	2990	2910	2840	2770	2700
		NAM/LB	0.1322	0.1363	0.1398	0.1434	0.1469	0.1505	0.154	0.1575	0.1611	0.1646
37000		MT	0.788	0.785	0.783	0.782	0.78	0.778	0.775	0.772	0.769	0.766
	-56.5	KCAS	255	254	253	253	252	252	251	250	248	247
		FF	3420	3330	3250	3190	3110	3040	2970	2900	2830	2770
		NAM/LB	0.1322	0.1352	0.1382	0.1409	0.144	0.147	0.1499	0.1529	0.156	0.159
35000		MT	0.779	0.776	0.775	0.773	0.771	0.767	0.763	0.761	0.757	0.753
	-54.3	KCAS	264	263	263	262	261	260	258	257	256	255
		FF	3460	3380	3320	3250	3180	3110	3030	2980	2900	2830
		NAM/LB	0.1298	0.1322	0.1347	0.1371	0.1396	0.1423	0.145	0.1475	0.1504	0.1532
30000		MT	0.749	0.745	0.741	0.737	0.731	0.725	0.717	0.710	0.703	0.695
	-44.4	KCAS	283	281	280	278	276	273	270	267	264	261
		FF	3685	3615	3540	3470	3390	3310	3216	3135	3055	2965
		NAM/LB	0.1199	0.1217	0.1235	0.1253	0.1273	0.1293	0.1315	0.1337	0.1358	0.1379
25000		MT	0.7	0.695	0.688	0.681	0.673	0.665	0.656	0.647	0.638	0.628
	-34.5	KCAS	293	290	287	284	280	277	273	269	265	261
		FF	3870	3790	3700	3620	3530	3440	3350	3260	3160	3070
		NAM/LB	0.109	0.1105	0.1119	0.1134	0.1149	0.1164	0.118	0.1197	0.1213	0.1231
20000		MT	0.641	0.632	0.624	0.615	0.607	0.598	0.59	0.581	0.572	0.563
	-24.6	KCAS	295	291	287	283	278	274	270	266	262	258
		FF	4030	3930	3830	3740	3640	3540	3450	3350	3260	3160
		NAM/LB	0.0976	0.0988	0.1	0.1012	0.1025	0.1038	0.1051	0.1065	0.1079	0.1094
15000		MT	0.575	0.567	0.56	0.552	0.545	0.538	0.53	0.524	0.517	0.51
	-14.7	KCAS	291	287	283	279	275	271	267	264	260	257
		FF	4133	4031	3931	3831	3735	3641	3550	3463	3375	3290
		NAM/LB	0.0872	0.0882	0.0892	0.0903	0.0914	0.0925	0.0936	0.0947	0.0959	0.0971
10000		MT	0.452	0.452	0.452	0.452	0.452	0.452	0.452	0.452	0.452	0.452
	-4.8	KCAS	250	250	250	250	250	250	250	250	250	250
		FF	3675	3634	3593	3553	3514	3480	3443	3410	3379	3347
		NAM/LB	0.0785	0.0794	0.0803	0.0812	0.0821	0.0829	0.0838	0.0846	0.0854	0.0862
5000		MT	0.413	0.413	0.413	0.413	0.413	0.413	0.413	0.413	0.413	0.413
	5.1	KCAS	250	250	250	250	250	250	250	250	250	250
		FF	3868	3830	3792	3755	3723	3688	3652	3623	3594	3565
		NAM/LB	0.0694	0.0701	0.0708	0.0715	0.0721	0.0728	0.0735	0.0741	0.0747	0.0753
0		MT	0.378	0.378	0.378	0.378	0.378	0.378	0.378	0.378	0.378	0.378
	15	KCAS	250	250	250	250	250	250	250	250	250	250
		FF	4119	4079	4046	4007	3975	3944	3913	3877	3847	3823
		NAM/LB	0.0607	0.0613	0.0618	0.0624	0.0629	0.0634	0.0639	0.0645	0.065	0.0654

NOTE: See the **GIV Operating Manual** or **GIV Cruise Control Manual** for procedures to account for temperature deviation from ISA day and/or wind conditions.

NOTE: Airspeed restricted to 250 KCAS for altitudes of 10,000 ft and below.

Non-SP GIV Long Range Cruise - ISA, ctd… CCM

ALT	OAT (°C)		GROSS WEIGHT - 1000 LB									
			56	54	52	50	48	46	44	42	40	38
45000		MT	0.793	0.791	0.788	0.785	0.782	0.778	0.774	0.77	0.764	0.757
	-56.5	KCAS	213	213	212	211	210	209	208	206	205	203
		FF	2560	2460	2380	2290	2210	2140	2070	2010	1930	1850
		NAM/LB	0.177	0.1845	0.1904	0.1964	0.2029	0.209	0.2145	0.22	0.2275	0.2351
43000		MT	0.785	0.783	0.78	0.776	0.773	0.77	0.765	0.761	0.755	0.75
	-56.5	KCAS	221	221	220	218	217	217	215	214	212	210
		FF	2550	2470	2390	2320	2250	2180	2110	2050	1970	1900
		NAM/LB	0.177	0.1819	0.1872	0.1922	0.1976	0.203	0.2083	0.2135	0.2201	0.2259
41000		MT	0.779	0.777	0.773	0.769	0.765	0.761	0.755	0.749	0.742	0.734
	-56.5	KCAS	230	229	228	227	225	224	222	220	218	215
		FF	2590	2520	2440	2370	2300	2240	2160	2090	2020	1940
		NAM/LB	0.1731	0.177	0.1817	0.1864	0.191	0.1955	0.2007	0.2058	0.2109	0.2165
39000		MT	0.771	0.767	0.763	0.759	0.754	0.748	0.741	0.734	0.726	0.716
	-56.5	KCAS	238	236	235	234	232	230	228	225	223	219
		FF	2630	2550	2490	2430	2350	2280	2210	2130	2060	1990
		NAM/LB	0.1683	0.1721	0.176	0.1798	0.1841	0.1883	0.1927	0.1972	0.2018	0.2065
37000		MT	0.763	0.759	0.752	0.746	0.74	0.734	0.725	0.716	0.705	0.691
	-56.5	KCAS	246	245	242	240	238	236	233	230	226	221
		FF	2700	2640	2540	2470	2400	2340	2260	2180	2100	2020
		NAM/LB	0.162	0.165	0.1694	0.173	0.1767	0.1803	0.1843	0.1882	0.1923	0.1965
35000		MT	0.748	0.743	0.737	0.73	0.723	0.714	0.704	0.687	0.665	0.638
	-54.3	KCAS	253	251	248	246	243	240	236	230	222	213
		FF	2760	2690	2620	2540	2470	2390	2310	2210	2090	1970
		NAM/LB	0.1562	0.1592	0.1623	0.1655	0.1687	0.172	0.1754	0.1791	0.1829	0.1869
30000		MT	0.685	0.675	0.663	0.651	0.637	0.625	0.608	0.593	0.576	0.560
	-44.4	KCAS	257	253	248	243	238	233	226	220	214	207
		FF	2880	2795	2700	2605	2505	2415	2310	2210	2105	2000
		NAM/LB	0.1401	0.1424	0.1448	0.1472	0.1498	0.1524	0.1553	0.1583	0.1614	0.1647
25000		MT	0.618	0.607	0.595	0.584	0.573	0.562	0.551	0.539	0.528	0.517
	-34.5	KCAS	256	251	246	241	237	232	227	222	217	212
		FF	2980	2880	2780	2690	2590	2500	2410	2320	2230	2150
		NAM/LB	0.1249	0.1268	0.1288	0.1309	0.133	0.1352	0.1375	0.1398	0.1423	0.1448
20000		MT	0.554	0.546	0.537	0.528	0.519	0.511	0.503	0.494	0.487	0.48
	-24.6	KCAS	254	249	245	241	237	233	229	225	222	218
		FF	3070	2980	2890	2800	2710	2630	2550	2470	2400	2330
		NAM/LB	0.111	0.1126	0.1142	0.1159	0.1176	0.1194	0.1212	0.123	0.1248	0.1266
15000		MT	0.503	0.497	0.491	0.484	0.478	0.472	0.467	0.461	0.455	0.45
	-14.7	KCAS	253	250	247	244	241	237	235	232	229	226
		FF	3207	3128	3051	2974	2901	2829	2763	2696	2634	2575
		NAM/LB	0.0983	0.0995	0.1007	0.102	0.1033	0.1046	0.1058	0.1071	0.1083	0.1095
10000		MT	0.452	0.452	0.452	0.452	0.452	0.448	0.443	0.438	0.433	0.428
	-4.8	KCAS	250	250	250	250	250	247	245	242	239	237
		FF	3316	3290	3260	3235	3213	3150	3089	3026	2964	2907
		NAM/LB	0.087	0.0877	0.0885	0.0892	0.0898	0.0907	0.0915	0.0924	0.0933	0.0941
5000		MT	0.413	0.413	0.413	0.413	0.413	0.413	0.413	0.413	0.411	0.406
	5.1	KCAS	250	250	250	250	250	250	250	250	249	246
		FF	3537	3509	3482	3459	3433	3411	3390	3373	3328	3266
		NAM/LB	0.0759	0.0765	0.0771	0.0776	0.0782	0.0787	0.0792	0.0796	0.0802	0.0808
0		MT	0.378	0.378	0.378	0.378	0.378	0.378	0.378	0.378	0.378	0.378
	15	KCAS	250	250	250	250	250	250	250	250	250	250
		FF	3794	3766	3743	3715	3693	3672	3650	3634	3613	3598
		NAM/LB	0.0659	0.0664	0.0668	0.0673	0.0677	0.0681	0.0685	0.0688	0.0692	0.0695

NOTE: See the **GIV Operating Manual** or **GIV Cruise Control Manual** for procedures to account for temperature deviation from ISA day and/or wind conditions.

NOTE: Airspeed restricted to 250 KCAS for altitudes of 10,000 ft and below.

Non-SP GIV Twin Engine Cruise: Mach 0.77 - ISA CCM

ALT	OAT		GROSS WEIGHT - 1000 LB									
(FT)	(°C)		76	74	72	70	68	66	64	62	60	58
45000		MT	****	****	****	****	****	****	****	****	****	0.770
	441.6	KCAS	****	****	****	****	****	****	****	****	****	206
		FF	****	****	****	****	****	****	****	****	****	2570
	-56.5	NAM/LB	****	****	****	****	****	****	****	****	****	.1721
43000		MT	****	****	****	****	****	****	0.770	0.770	0.770	0.770
	441.6	KCAS	****	****	****	****	****	****	216	216	216	216
		FF	****	****	****	****	****	****	2810	2720	2630	2550
	-56.5	NAM/LB	****	****	****	****	****	****	.1569	.1622	.1679	.1732
41000		MT	****	****	****	0.770	0.770	0.770	0.770	0.770	0.770	0.770
	441.6	KCAS	****	****	****	227	227	227	227	227	227	227
		FF	****	****	****	3070	2970	2880	2800	2720	2660	2590
	-56.5	NAM/LB	****	****	****	.1439	.1486	.1534	.1577	.1621	.1663	.1704
39000		MT	0.770	0.770	0.770	0.770	0.770	0.770	0.770	0.770	0.770	0.770
	441.6	KCAS	238	238	238	238	238	238	238	238	238	238
		FF	3310	3220	3140	3050	2980	2910	2850	2790	2730	2670
	-56.5	NAM/LB	.1333	.1372	.1404	.1447	.1483	.1518	.1551	.1584	.1620	.1652
37000		MT	0.770	0.770	0.770	0.770	0.770	0.770	0.770	0.770	0.770	0.770
	441.6	KCAS	249	249	249	249	249	249	249	249	249	249
		FF	3310	3240	3170	3110	3050	2990	2940	2880	2830	2790
	-56.5	NAM/LB	.1336	.1365	.1393	.1421	.1448	.1478	.1505	.1532	.1558	.1584
35000		MT	0.770	0.770	0.770	0.770	0.770	0.770	0.770	0.770	0.770	0.770
	443.8	KCAS	261	261	261	261	261	261	261	261	261	261
		FF	3400	3340	3280	3230	3170	3130	3080	3040	2990	2940
	-54.3	NAM/LB	.1307	.1329	.1354	.1376	.1398	.1420	.1442	.1462	.1483	.1510
33000		MT	0.770	0.770	0.770	0.770	0.770	0.770	0.770	0.770	0.770	0.770
	447.8	KCAS	273	273	273	273	273	273	273	273	273	273
		FF	3560	3510	3460	3420	3360	3310	3270	3230	3200	3160
	-50.4	NAM/LB	.1258	.1276	.1294	.1311	.1334	.1351	.1368	.1385	.1401	.1418
31000		MT	0.770	0.770	0.770	0.770	0.770	0.770	0.770	0.770	0.770	0.770
	451.8	KCAS	285	285	285	285	285	285	285	285	285	285
		FF	3750	3710	3660	3620	3580	3540	3500	3450	3420	3390
	-46.4	NAM/LB	.1204	.1219	.1233	.1247	.1261	.1275	.1289	.1309	.1322	.1335
29000		MT	0.770	0.770	0.770	0.770	0.770	0.770	0.770	0.770	0.770	0.770
	455.7	KCAS	298	298	298	298	298	298	298	298	298	298
		FF	3960	3920	3880	3850	3810	3770	3720	3690	3660	3640
	-42.5	NAM/LB	.1150	.1162	.1173	.1185	.1196	.1208	.1224	.1234	.1244	.1253
27000		MT	0.770	0.770	0.770	0.770	0.770	0.770	0.770	0.770	0.770	0.770
	459.6	KCAS	311	311	311	311	311	311	311	311	311	311
		FF	4250	4210	4170	4140	4110	4080	4050	4020	4000	3980
	-38.5	NAM/LB	.1082	.1092	.1101	.1110	.1119	.1127	.1135	.1142	.1149	.1156
25000		MT	0.770	0.770	0.770	0.770	0.770	0.770	0.770	0.770	0.770	0.770
	463.5	KCAS	324	324	324	324	324	324	324	324	324	324
		FF	4530	4500	4470	4440	4410	4390	4370	4340	4320	4310
	-34.5	NAM/LB	.1022	.1030	.1037	.1043	.1050	.1056	.1062	.1067	.1072	.1077
20000		MT	****	****	****	****	****	****	****	****	****	****
	473.0	KCAS	****	****	****	****	****	****	****	****	****	****
		FF	****	****	****	****	****	****	****	****	****	****
	-24.6	NAM/LB	****	****	****	****	****	****	****	****	****	****

NOTE: See the **GIV Operating Manual** or **GIV Cruise Control Manual** for procedures to account for temperature deviation from ISA day and/or wind conditions.

Non-SP GIV Twin Engine Cruise - Mach 0.77- ISA, ctd… CCM

ALT (FT)	OAT (°C)		GROSS WEIGHT - 1000 LB									
			56	54	52	50	48	46	44	42	40	38
45000		MT	0.770	0.770	0.770	0.770	0.770	0.770	0.770	0.770	0.770	0.770
	441.6	KCAS	206	206	206	206	206	206	206	206	206	206
		FF	2470	2380	2300	2230	2160	2100	2050	1990	1940	1900
	-56.5	NAM/LB	.1789	.1857	.1922	.1982	.2045	.2101	.2155	.2218	.2273	.2326
43000		MT	0.770	0.770	0.770	0.770	0.770	0.770	0.770	0.770	0.770	0.770
	441.6	KCAS	216	216	216	216	216	216	216	216	216	216
		FF	2470	2410	2340	2290	2230	2180	2130	2080	2040	1990
	-56.5	NAM/LB	.1785	.1834	.1885	.1931	.1982	.2029	.2075	.2119	.2163	.2216
41000		MT	0.770	0.770	0.770	0.770	0.770	0.770	0.770	0.770	0.770	0.770
	441.6	KCAS	227	227	227	227	227	227	227	227	227	227
		FF	2530	2480	2420	2370	2320	2280	2240	2190	2150	2110
	-56.5	NAM/LB	.1744	.1781	.1825	.1864	.1901	.1938	.1974	.2019	.2055	.2089
39000		MT	0.770	0.770	0.770	0.770	0.770	0.770	0.770	0.770	0.770	0.770
	441.6	KCAS	238	238	238	238	238	238	238	238	238	238
		FF	2620	2570	2530	2480	2430	2390	2360	2320	2290	2260
	-56.5	NAM/LB	.1685	.1716	.1747	.1777	.1815	.1845	.1875	.1904	.1932	.1958
37000		MT	0.770	0.770	0.770	0.770	0.770	0.770	0.770	0.770	0.770	0.770
	441.6	KCAS	249	249	249	249	249	249	249	249	249	249
		FF	2740	2700	2650	2610	2570	2540	2510	2480	2450	2430
	-56.5	NAM/LB	.1609	.1634	.1666	.1691	.1716	.1740	.1763	.1784	.1804	.1821
35000		MT	0.770	0.770	0.770	0.770	0.770	0.770	0.770	0.770	0.770	0.770
	443.8	KCAS	261	261	261	261	261	261	261	261	261	261
		FF	2900	2860	2820	2790	2760	2730	2700	2670	2650	2630
	-54.3	NAM/LB	.1531	.1552	.1572	.1591	.1610	.1628	.1644	.1664	.1676	.1687
33000		MT	0.770	0.770	0.770	0.770	0.770	0.770	0.770	0.770	0.770	0.770
	447.8	KCAS	273	273	273	273	273	273	273	273	273	273
		FF	3120	3090	3060	3010	2990	2970	2950	2930	2910	2900
	-50.4	NAM/LB	.1434	.1450	.1465	.1486	.1498	.1510	.1520	.1529	.1538	.1545
31000		MT	0.770	0.770	0.770	0.770	0.770	0.770	0.770	0.770	0.770	0.770
	451.8	KCAS	285	285	285	285	285	285	285	285	285	285
		FF	3350	3330	3300	3280	3260	3240	3220	3210	3190	3180
	-46.4	NAM/LB	.1347	.1358	.1369	.1378	.1387	.1394	.1402	.1408	.1415	.1420
29000		MT	0.770	0.770	0.770	0.770	0.770	0.770	0.770	0.770	0.770	0.770
	455.7	KCAS	298	298	298	298	298	298	298	298	298	298
		FF	3610	3590	3570	3560	3540	3520	3510	3500	3490	3480
	-42.5	NAM/LB	.1261	.1269	.1276	.1282	.1288	.1293	.1298	.1303	.1307	.1311
27000		MT	0.770	0.770	0.770	0.770	0.770	0.770	0.770	0.770	0.770	0.770
	459.6	KCAS	311	311	311	311	311	311	311	311	311	311
		FF	3960	3940	3920	3900	3890	3870	3860	3840	3830	3820
	-38.5	NAM/LB	.1162	.1167	.1172	.1177	.1182	.1187	.1191	.1195	.1200	.1204
25000		MT	0.770	0.770	0.770	0.770	0.770	0.770	0.770	0.770	0.770	0.770
	463.5	KCAS	324	324	324	324	324	324	324	324	324	324
		FF	4290	4270	4250	4240	4220	4210	4190	4170	4160	4140
	-34.5	NAM/LB	.1081	.1086	.1090	.1094	.1098	.1102	.1106	.1110	.1114	.1118
20000		MT	****	****	****	****	****	****	****	****	****	****
	473.0	KCAS	****	****	****	****	****	****	****	****	****	****
		FF	****	****	****	****	****	****	****	****	****	****
	-24.6	NAM/LB	****	****	****	****	****	****	****	****	****	****

NOTE: See the **GIV Operating Manual** or **GIV Cruise Control Manual** for procedures to account for temperature deviation from ISA day and/or wind conditions.

Non-SP GIV Twin Engine Cruise: Mach 0.80 - ISA CCM

ALT (FT)	OAT (°C)		GROSS WEIGHT - 1000 LB 76	74	72	70	68	66	64	62	60	58
45000		MT	****	****	****	****	****	****	****	****	****	0.800
	458.9	KCAS	****	****	****	****	****	****	****	****	****	216
		FF	****	****	****	****	****	****	****	****	****	2710
	-56.5	NAM/LB	****	****	****	****	****	****	****	****	****	.1694
43000		MT	****	****	****	****	****	****	0.800	0.800	0.800	0.800
	458.9	KCAS	****	****	****	****	****	****	226	226	226	226
		FF	****	****	****	****	****	****	2970	2880	2790	2720
	-56.5	NAM/LB	****	****	****	****	****	****	.1543	.1592	.1642	.1688
41000		MT	****	****	****	0.800	0.800	0.800	0.800	0.800	0.800	0.800
	458.9	KCAS	****	****	****	237	237	237	237	237	237	237
		FF	****	****	****	3240	3160	3060	2980	2920	2850	2790
	-56.5	NAM/LB	****	****	****	.1415	.1451	.1498	.1537	.1572	.1608	.1644
39000		MT	0.800	0.800	0.800	0.800	0.800	0.800	0.800	0.800	0.800	0.800
	458.9	KCAS	248	248	248	248	248	248	248	248	248	248
		FF	3520	3410	3340	3260	3190	3130	3070	3010	2940	2890
	-56.5	NAM/LB	.1305	.1344	.1375	.1407	.1436	.1468	.1497	.1526	.1559	.1587
37000		MT	0.800	0.800	0.800	0.800	0.800	0.800	0.800	0.800	0.800	0.800
	458.9	KCAS	260	260	260	260	260	260	260	260	260	260
		FF	3540	3470	3410	3350	3290	3230	3170	3130	3080	3040
	-56.5	NAM/LB	.1296	.1321	.1346	.1370	.1394	.1422	.1445	.1467	.1489	.1509
35000		MT	0.800	0.800	0.800	0.800	0.800	0.800	0.800	0.800	0.800	0.800
	461.1	KCAS	272	272	272	272	272	272	272	272	272	272
		FF	3660	3610	3540	3490	3440	3400	3360	3320	3280	3230
	-54.3	NAM/LB	.1258	.1278	.1301	.1321	.1339	.1356	.1374	.1390	.1407	.1429
33000		MT	0.800	0.800	0.800	0.800	0.800	0.800	0.800	0.800	0.800	0.800
	465.3	KCAS	284	284	284	284	284	284	284	284	284	284
		FF	3860	3810	3770	3730	3670	3630	3590	3550	3520	3480
	-50.4	NAM/LB	.1204	.1220	.1234	.1249	.1268	.1281	.1295	.1309	.1323	.1336
31000		MT	0.800	0.800	0.800	0.800	0.800	0.800	0.800	0.800	0.800	0.800
	469.4	KCAS	297	297	297	297	297	297	297	297	297	297
		FF	4100	4050	4010	3970	3930	3890	3850	3810	3780	3750
	-46.4	NAM/LB	.1146	.1158	.1170	.1182	.1194	.1206	.1218	.1231	.1242	.1252
29000		MT	0.800	0.800	0.800	0.800	0.800	0.800	0.800	0.800	0.800	0.800
	473.5	KCAS	311	311	311	311	311	311	311	311	311	311
		FF	4350	4320	4280	4240	4210	4170	4130	4100	4080	4050
	-42.5	NAM/LB	.1087	.1097	.1106	.1116	.1125	.1134	.1146	.1154	.1162	.1169
27000		MT	0.800	0.800	0.800	0.800	0.800	0.800	0.800	0.800	0.800	0.800
	477.5	KCAS	324	324	324	324	324	324	324	324	324	324
		FF	4670	4630	4600	4560	4530	4500	4470	4440	4420	4400
	-38.5	NAM/LB	.1023	.1031	.1039	.1047	.1054	.1062	.1068	.1075	.1081	.1086
25000		MT	0.800	0.800	0.800	0.800	0.800	0.800	0.800	0.800	0.800	0.800
	481.6	KCAS	338	338	338	338	338	338	338	338	338	338
		FF	4990	4960	4930	4900	4860	4830	4810	4780	4760	4740
	-34.5	NAM/LB	.0965	.0971	.0977	.0984	.0990	.0997	.1002	.1006	.1011	.1015
20000		MT	****	****	****	****	****	****	****	****	****	****
	491.5	KCAS	****	****	****	****	****	****	****	****	****	****
		FF	****	****	****	****	****	****	****	****	****	****
	-24.6	NAM/LB	****	****	****	****	****	****	****	****	****	****

NOTE: See the **GIV Operating Manual** or **GIV Cruise Control Manual** for procedures to account for temperature deviation from ISA day and/or wind conditions.

Non-SP GIV Twin Engine Cruise - Mach 0.80 - ISA, ctd… CCM

ALT (FT)	OAT (°C)		GROSS WEIGHT - 1000 LB									
			56	54	52	50	48	46	44	42	40	38
45000		MT	0.800	0.800	0.800	0.800	0.800	0.800	0.800	0.800	0.800	0.800
	458.9	KCAS	216	216	216	216	216	216	216	216	216	216
		FF	2620	2530	2450	2390	2320	2270	2220	2160	2110	2070
	-56.5	NAM/LB	.1751	.1816	.1870	.1919	.1974	.2023	.2070	.2126	.2170	.2212
43000		MT	0.800	0.800	0.800	0.800	0.800	0.800	0.800	0.800	0.800	0.800
	458.9	KCAS	226	226	226	226	226	226	226	226	226	226
		FF	2650	2590	2530	2470	2410	2360	2320	2280	2240	2190
	-56.5	NAM/LB	.1729	.1773	.1817	.1858	.1905	.1944	.1980	.2015	.2050	.2093
41000		MT	0.800	0.800	0.800	0.800	0.800	0.800	0.800	0.800	0.800	0.800
	458.9	KCAS	237	237	237	237	237	237	237	237	237	237
		FF	2730	2680	2620	2570	2530	2490	2450	2410	2370	2340
	-56.5	NAM/LB	.1679	.1711	.1751	.1783	.1812	.1841	.1871	.1907	.1935	.1962
39000		MT	0.800	0.800	0.800	0.800	0.800	0.800	0.800	0.800	0.800	0.800
	458.9	KCAS	248	248	248	248	248	248	248	248	248	248
		FF	2840	2800	2760	2720	2670	2630	2600	2570	2540	2510
	-56.5	NAM/LB	.1613	.1639	.1663	.1687	.1718	.1742	.1766	.1788	.1810	.1831
37000		MT	0.800	0.800	0.800	0.800	0.800	0.800	0.800	0.800	0.800	0.800
	458.9	KCAS	260	260	260	260	260	260	260	260	260	260
		FF	3000	2960	2910	2880	2840	2810	2780	2750	2730	2700
	-56.5	NAM/LB	.1529	.1549	.1576	.1595	.1615	.1633	.1651	.1668	.1684	.1697
35000		MT	0.800	0.800	0.800	0.800	0.800	0.800	0.800	0.800	0.800	0.800
	461.1	KCAS	272	272	272	272	272	272	272	272	272	272
		FF	3190	3160	3120	3090	3060	3030	3010	2980	2960	2950
	-54.3	NAM/LB	.1446	.1461	.1478	.1493	.1508	.1522	.1534	.1548	.1557	.1565
33000		MT	0.800	0.800	0.800	0.800	0.800	0.800	0.800	0.800	0.800	0.800
	465.3	KCAS	284	284	284	284	284	284	284	284	284	284
		FF	3450	3420	3390	3350	3330	3310	3290	3270	3260	3240
	-50.4	NAM/LB	.1349	.1362	.1374	.1388	.1398	.1407	.1414	.1422	.1428	.1434
31000		MT	0.800	0.800	0.800	0.800	0.800	0.800	0.800	0.800	0.800	0.800
	469.4	KCAS	297	297	297	297	297	297	297	297	297	297
		FF	3720	3690	3670	3640	3630	3610	3590	3570	3560	3550
	-46.4	NAM/LB	.1262	.1271	.1280	.1288	.1295	.1301	.1307	.1313	.1318	.1323
29000		MT	0.800	0.800	0.800	0.800	0.800	0.800	0.800	0.800	0.800	0.800
	473.5	KCAS	311	311	311	311	311	311	311	311	311	311
		FF	4030	4010	3990	3980	3960	3950	3930	3920	3910	3900
	-42.5	NAM/LB	.1175	.1181	.1186	.1191	.1196	.1200	.1204	.1207	.1211	.1214
27000		MT	0.800	0.800	0.800	0.800	0.800	0.800	0.800	0.800	0.800	0.800
	477.5	KCAS	324	324	324	324	324	324	324	324	324	324
		FF	4380	4360	4340	4320	4300	4280	4270	4250	4240	4220
	-38.5	NAM/LB	.1091	.1096	.1101	.1106	.1111	.1115	.1119	.1123	.1127	.1131
25000		MT	0.800	0.800	0.800	0.800	0.800	0.800	0.800	0.800	0.800	0.800
	481.6	KCAS	338	338	338	338	338	338	338	338	338	338
		FF	4720	4700	4680	4660	4640	4620	4600	4580	4570	4550
	-34.5	NAM/LB	.1020	.1024	.1029	.1033	.1037	.1042	.1046	.1050	.1055	.1059
20000		MT	****	****	****	****	****	****	****	****	****	****
	491.5	KCAS	****	****	****	****	****	****	****	****	****	****
		FF	****	****	****	****	****	****	****	****	****	****
	-24.6	NAM/LB	****	****	****	****	****	****	****	****	****	****

NOTE: See the **GIV Operating Manual** or **GIV Cruise Control Manual** for procedures to account for temperature deviation from ISA day and/or wind conditions.

Non-SP GIV Twin Engine Cruise: Mach 0.83 - ISA CCM

ALT (FT)	OAT (°C)		GROSS WEIGHT - 1000 LB									
			76	74	72	70	68	66	64	62	60	58
45000		MT	****	****	****	****	****	****	****	****	****	****
	476.1	KCAS	****	****	****	****	****	****	****	****	****	****
		FF	****	****	****	****	****	****	****	****	****	****
	-56.5	NAM/LB	****	****	****	****	****	****	****	****	****	****
43000		MT	****	****	****	****	****	****	****	****	****	0.830
	476.1	KCAS	****	****	****	****	****	****	****	****	****	235
		FF	****	****	****	****	****	****	****	****	****	3230
	-56.5	NAM/LB	****	****	****	****	****	****	****	****	****	.1474
41000		MT	****	****	****	****	****	****	0.830	0.830	0.830	0.830
	476.1	KCAS	****	****	****	****	****	****	247	247	247	247
		FF	****	****	****	****	****	****	3540	3430	3320	3240
	-56.5	NAM/LB	****	****	****	****	****	****	.1345	.1390	.1432	.1471
39000		MT	****	****	****	0.830	0.830	0.830	0.830	0.830	0.830	0.830
	476.1	KCAS	****	****	****	258	258	258	258	258	258	258
		FF	****	****	****	3860	3740	3640	3560	3470	3410	3340
	-56.5	NAM/LB	****	****	****	.1234	.1273	.1307	.1339	.1370	.1396	.1424
37000		MT	0.830	0.830	0.830	0.830	0.830	0.830	0.830	0.830	0.830	0.830
	476.1	KCAS	271	271	271	271	271	271	271	271	271	271
		FF	4170	4060	3970	3880	3800	3740	3670	3610	3560	3510
	-56.5	NAM/LB	.1142	.1173	.1200	.1227	.1252	.1273	.1297	.1318	.1337	.1356
35000		MT	0.830	0.830	0.830	0.830	0.830	0.830	0.830	0.830	0.830	0.830
	478.4	KCAS	283	283	283	283	283	283	283	283	283	283
		FF	4240	4160	4110	4040	3980	3930	3880	3830	3780	3750
	-54.3	NAM/LB	.1128	.1149	.1165	.1185	.1201	.1218	.1234	.1250	.1266	.1277
33000		MT	0.830	0.830	0.830	0.830	0.830	0.830	0.830	0.830	0.830	0.830
	482.7	KCAS	296	296	296	296	296	296	296	296	296	296
		FF	4430	4370	4320	4260	4240	4190	4150	4100	4060	4010
	-50.4	NAM/LB	.1090	.1104	.1119	.1132	.1138	.1152	.1165	.1178	.1190	.1202
31000		MT	0.830	0.830	0.830	0.830	0.830	0.830	0.830	0.830	0.830	0.830
	487.0	KCAS	310	310	310	310	310	310	310	310	310	310
		FF	4690	4630	4580	4530	4480	4440	4390	4400	4350	4310
	-46.4	NAM/LB	.1039	.1051	.1063	.1075	.1087	.1098	.1109	.1108	.1118	.1129
29000		MT	0.830	0.830	0.830	0.830	0.830	0.830	0.830	0.830	0.830	0.830
	491.3	KCAS	323	323	323	323	323	323	323	323	323	323
		FF	5020	4980	4930	4890	4850	4810	4800	4760	4730	4700
	-42.5	NAM/LB	.0978	.0987	.0996	.1004	.1013	.1022	.1024	.1031	.1038	.1045
27000		MT	0.830	0.830	0.830	0.830	0.830	0.830	0.830	0.830	0.830	0.830
	495.5	KCAS	337	337	337	337	337	337	337	337	337	337
		FF	5300	5260	5220	5180	5140	5090	5060	5020	4990	4970
	-38.5	NAM/LB	.0934	.0942	.0949	.0957	.0965	.0973	.0980	.0986	.0992	.0998
25000		MT	****	****	****	****	****	****	****	****	****	****
	499.6	KCAS	****	****	****	****	****	****	****	****	****	****
		FF	****	****	****	****	****	****	****	****	****	****
	-34.5	NAM/LB	****	****	****	****	****	****	****	****	****	****
20000		MT	****	****	****	****	****	****	****	****	****	****
	509.9	KCAS	****	****	****	****	****	****	****	****	****	****
		FF	****	****	****	****	****	****	****	****	****	****
	-24.6	NAM/LB	****	****	****	****	****	****	****	****	****	****

NOTE: See the **GIV Operating Manual** or **GIV Cruise Control Manual** for procedures to account for temperature deviation from ISA day and/or wind conditions.

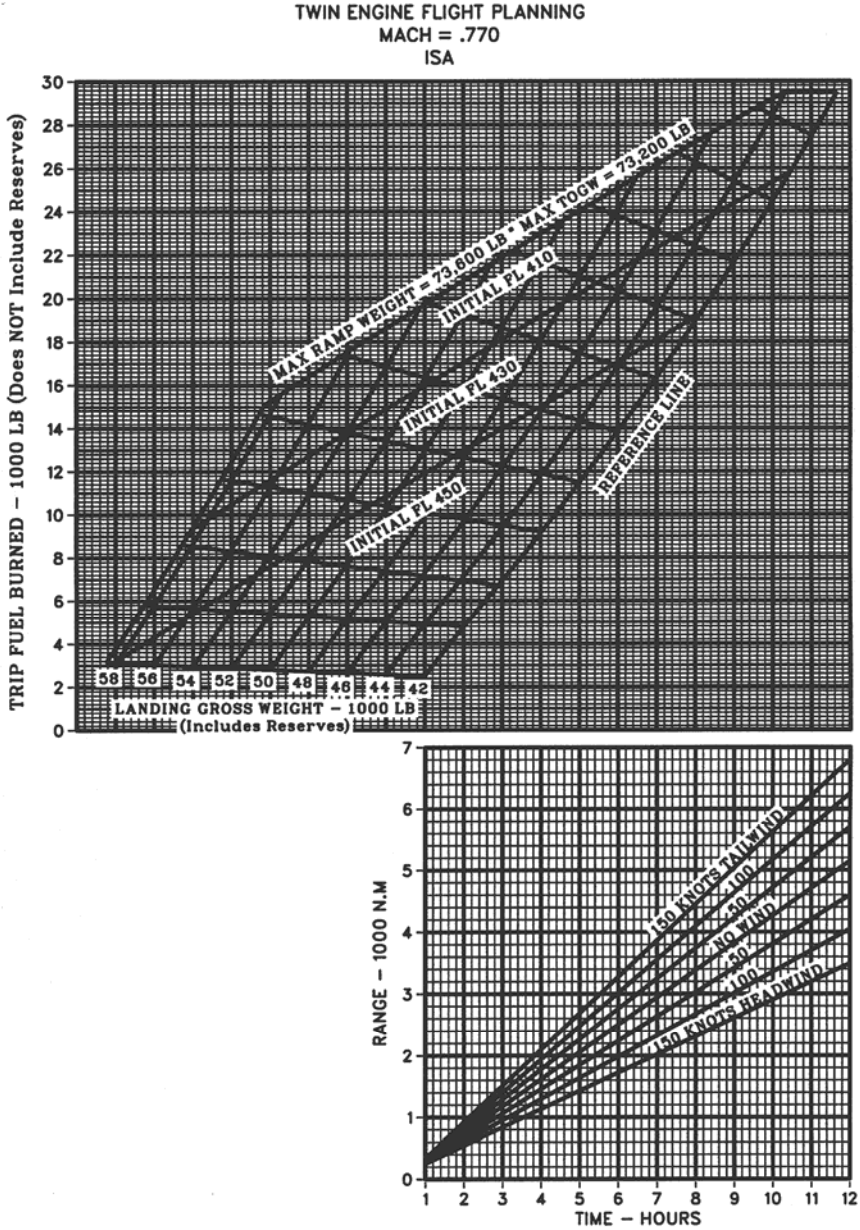
Non-SP GIV Twin Engine Cruise - Mach 0.83 - ISA, ctd… CCM

ALT (FT)	OAT (°C)		GROSS WEIGHT - 1000 LB									
			56	54	52	50	48	46	44	42	40	38
45000		MT	****	****	0.830	0.830	0.830	0.830	0.830	0.830	0.830	0.830
	476.1	KCAS	****	****	225	225	225	225	225	225	225	225
		FF	****	****	2900	2790	2690	2620	2540	2490	2440	2390
	-56.5	NAM/LB	****	****	.1641	.1708	.1767	.1820	.1874	.1911	.1952	.1992
43000		MT	0.830	0.830	0.830	0.830	0.830	0.830	0.830	0.830	0.830	0.830
	476.1	KCAS	235	235	235	235	235	235	235	235	235	235
		FF	3100	3010	2920	2840	2780	2730	2670	2620	2580	2540
	-56.5	NAM/LB	.1535	.1581	.1629	.1674	.1710	.1746	.1781	.1814	.1847	.1871
41000		MT	0.830	0.830	0.830	0.830	0.830	0.830	0.830	0.830	0.830	0.830
	476.1	KCAS	247	247	247	247	247	247	247	247	247	247
		FF	3150	3080	3030	2970	2920	2870	2820	2790	2750	2710
	-56.5	NAM/LB	.1509	.1546	.1572	.1602	.1629	.1657	.1685	.1705	.1730	.1754
39000		MT	0.830	0.830	0.830	0.830	0.830	0.830	0.830	0.830	0.830	0.830
	476.1	KCAS	258	258	258	258	258	258	258	258	258	258
		FF	3290	3230	3180	3140	3100	3060	3020	2980	2940	2910
	-56.5	NAM/LB	.1449	.1472	.1496	.1518	.1535	.1557	.1578	.1599	.1619	.1637
37000		MT	0.830	0.830	0.830	0.830	0.830	0.830	0.830	0.830	0.830	0.830
	476.1	KCAS	271	271	271	271	271	271	271	271	271	271
		FF	3460	3410	3380	3340	3300	3260	3220	3190	3160	3140
	-56.5	NAM/LB	.1375	.1395	.1408	.1425	.1442	.1459	.1476	.1492	.1506	.1519
35000		MT	0.830	0.830	0.830	0.830	0.830	0.830	0.830	0.830	0.830	0.830
	478.4	KCAS	283	283	283	283	283	283	283	283	283	283
		FF	3710	3660	3620	3590	3550	3520	3490	3480	3450	3430
	-54.3	NAM/LB	.1291	.1305	.1320	.1334	.1348	.1360	.1372	.1376	.1385	.1393
33000		MT	0.830	0.830	0.830	0.830	0.830	0.830	0.830	0.830	0.830	0.830
	482.7	KCAS	296	296	296	296	296	296	296	296	296	296
		FF	3970	3930	3890	3890	3860	3840	3810	3790	3770	3750
	-50.4	NAM/LB	.1215	.1228	.1240	.1240	.1249	.1258	.1266	.1274	.1282	.1289
31000		MT	0.830	0.830	0.830	0.830	0.830	0.830	0.830	0.830	0.830	0.830
	487.0	KCAS	310	310	310	310	310	310	310	310	310	310
		FF	4280	4240	4210	4190	4160	4130	4110	4080	4070	4050
	-46.4	NAM/LB	.1138	.1147	.1156	.1163	.1171	.1178	.1186	.1192	.1198	.1203
29000		MT	0.830	0.830	0.830	0.830	0.830	0.830	0.830	0.830	0.830	0.830
	491.3	KCAS	323	323	323	323	323	323	323	323	323	323
		FF	4670	4650	4620	4600	4580	4560	4540	4520	4510	4490
	-42.5	NAM/LB	.1051	.1057	.1063	.1068	.1073	.1078	.1082	.1086	.1090	.1094
27000		MT	0.830	0.830	0.830	0.830	0.830	0.830	0.830	0.830	0.830	0.830
	495.5	KCAS	337	337	337	337	337	337	337	337	337	337
		FF	4940	4910	4880	4850	4830	4810	4790	4770	4750	4730
	-38.5	NAM/LB	.1004	.1009	.1015	.1021	.1026	.1031	.1035	.1039	.1044	.1048
25000		MT	****	****	****	****	****	****	****	****	****	****
	499.6	KCAS	****	****	****	****	****	****	****	****	****	****
		FF	****	****	****	****	****	****	****	****	****	****
	-34.5	NAM/LB	****	****	****	****	****	****	****	****	****	****
20000		MT	****	****	****	****	****	****	****	****	****	****
	509.9	KCAS	****	****	****	****	****	****	****	****	****	****
		FF	****	****	****	****	****	****	****	****	****	****
	-24.6	NAM/LB	****	****	****	****	****	****	****	****	****	****

NOTE: See the **GIV Operating Manual** or **GIV Cruise Control Manual** for procedures to account for temperature deviation from ISA day and/or wind conditions.

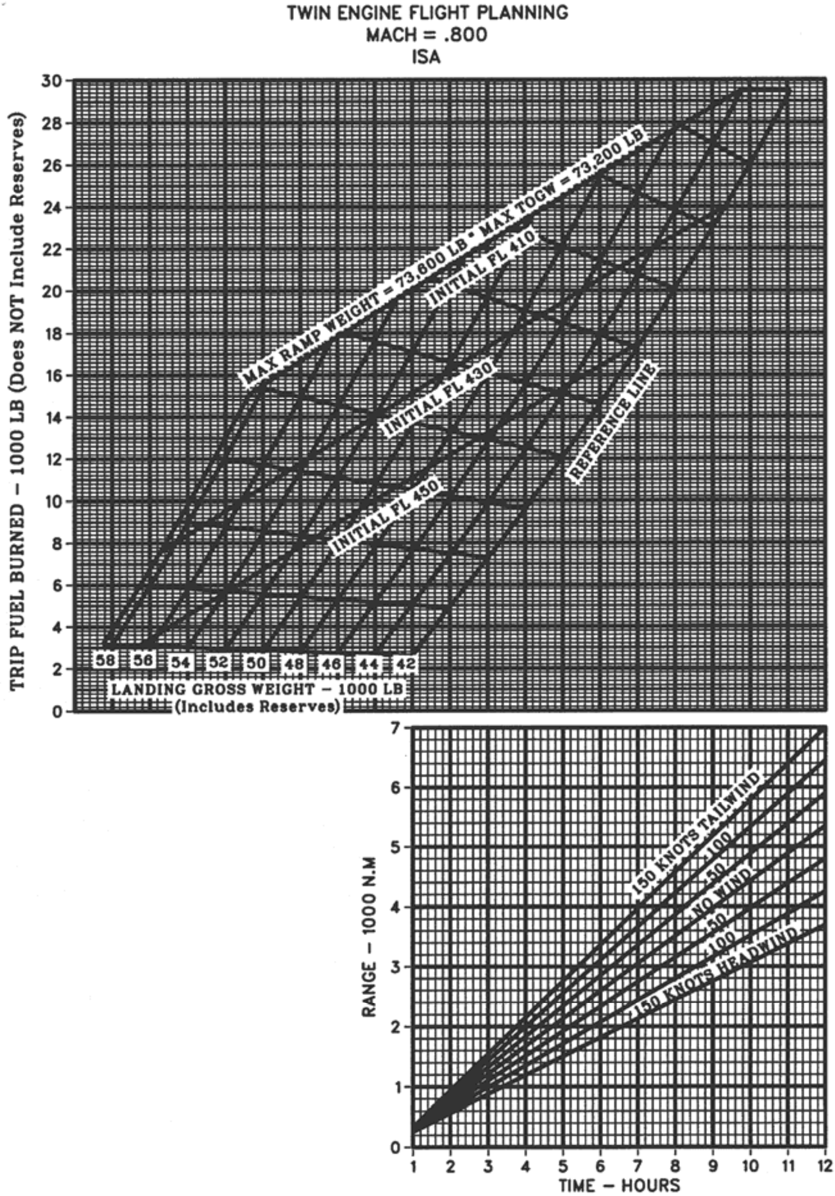
Non-SP GIV Twin Engine Flight Planning: Mach 0.77 - ISA

CCM



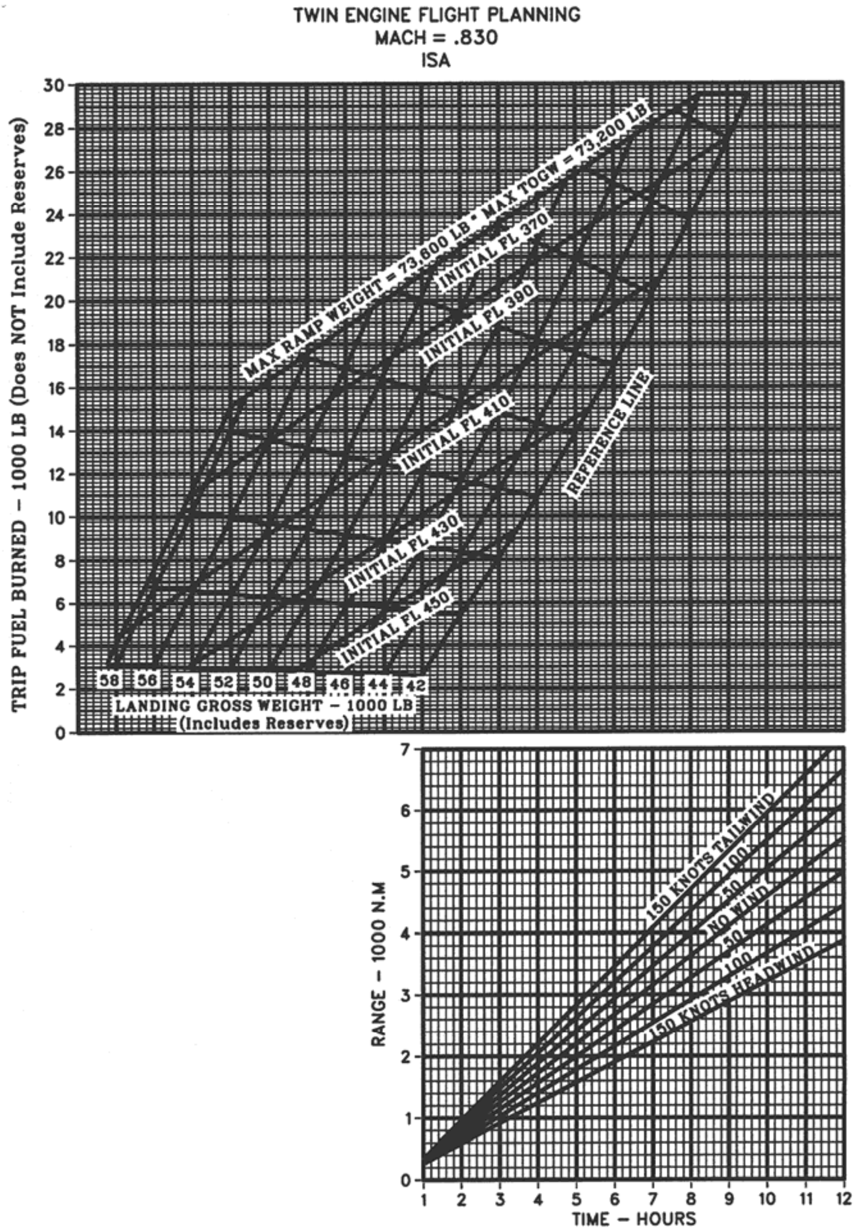
Non-SP GIV Twin Engine Flight Planning: Mach 0.80 - ISA

CCM



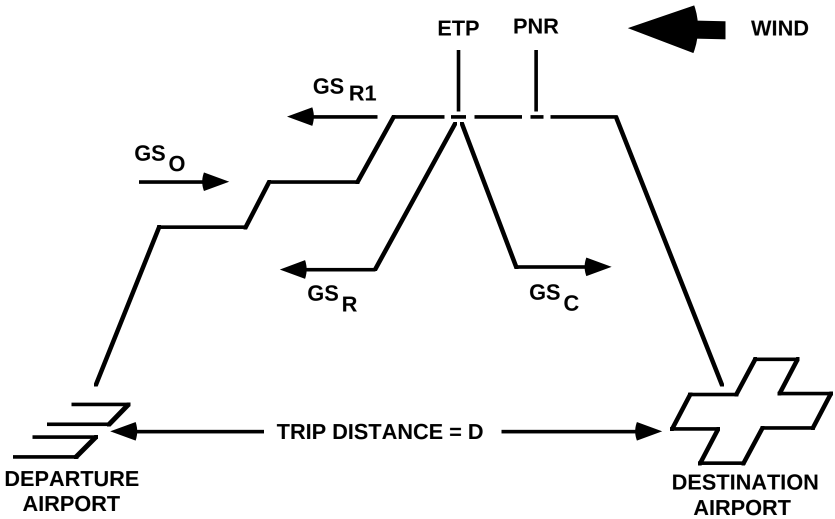
Non-SP GIV Twin Engine Flight Planning: Mach 0.83 - ISA

CCM



Non-SP GIV Equal Time Point And Point Of No Return

CCM



The following formula is used to calculate the ground distance from the departure airport to ETP:

$$\text{GROUND DISTANCE TO ETP} = \frac{(D)\,(GS_R)}{GS_C + GS_R} = \text{NM}$$

Where:

D = Total Trip Distance

GS_C = Ground Speed To Continue To Destination At Altitude To Be Flown

GS_R = Ground Speed To Departure Airport At Altitude To Be Flown

The following formula is used to calculate the ground distance from the departure airport to PNR:

$$\text{GROUND DISTANCE TO PNR} = \frac{(\text{Endurance})\,(GS_{R1})\,(GS_O)}{GS_O + GS_{R1}} = \text{NM}$$

Where:

$$\text{Endurance} = \frac{\text{Total Fuel Quantity}}{\text{Average Fuel Flow}}$$

GS_O = Normal Outbound Ground Speed At Cruise Altitude

GS_{R1} = Return Ground Speed At Normal Cruise Altitude

Non-SP GIV Twin Engine Alternate Airport Flight Plan Fuel

CCM

Conditions:

- Standard Day, No Wind
- Zero-Fuel Gross Weight of 44,100 Lb
- 1500 Lb Reserve Fuel Included
- Five (5) Minute Approach Fuel Allowance Included

Distance To Alternate (NM)	Flight Level	Enroute Time (Hr:Min)	TAS (Knots)	True Mach Number	CAS (Knots)	Fuel Quantity (Pounds)
100	230	0:24	329	.542	233	2770
120	250	0:27	338	.562	232	2920
140	310	0:29	378	.645	235	3050
160	350	0:32	412	.715	240	3170
180	370	0:33	427	.745	240	3280
200	410	0:36	437	.762	224	3380
220	430	0:39	442	.770	216	3480
240	450	0:42	442	.770	206	3580
260	450	0:44	442	.770	206	3680
280	450	0:47	442	.770	206	3780
300	450	0:50	442	.770	206	3880
320	450	0:53	442	.770	206	3990
340	450	0:56	442	.770	206	4090
360	450	0:59	442	.770	206	4190
380	450	1:01	442	.770	206	4270
400	450	1:03	442	.770	206	4370
420	450	1:06	442	.770	206	4490
440	450	1:09	442	.770	206	4590
460	450	1:12	442	.770	206	4670
480	450	1:15	442	.770	206	4790
500	450	1:18	442	.770	206	4890
520	450	1:20	442	.770	206	4970
540	450	1:23	442	.770	206	5090
560	450	1:26	442	.770	206	5200
580	450	1:29	442	.770	206	5290
600	450	1:31	442	.770	206	5380

Non-SP GIV Landing Field Length: Anti-Skid System Operative - Flaps 39°

AFM 5.11

CAUTION: THE GIV MAXIMUM LANDING WEIGHT IS 58,500 POUNDS.

NOTES:

1. ISA day, normal landing configuration.
2. For intended destination wet, multiply landing field lengths below by 1.15.
3. For unfactored landing distances, multiply field lengths below by 0.60.
4. Field lengths seen below are based on no wind or runway slope, but may be conservatively used with headwinds or uphill runway slopes.
5. For all abnormal landing configurations, see **Abnormal Landing Field Length Table**, page PC-16.

Landing Gross Weight (Lb)	Intended Destination Dry Landing Field Length (Feet) For Airport Pressure Altitudes As Shown					
	Sea Level	**2000 Feet**	**4000 Feet**	**6000 Feet**	**8000 Feet**	**10000 Feet**
45000	4870	5030	5190	5390	5640	6030
50000	5150	5330	5510	5730	6010	6450
55000	5430	5620	5820	6070	6380	6850
60000	5720	5920	6140	6410	6760	7270
65000	5990	6220	6460	6760	7120	7680
70000	6280	6520	6790	7100	7500	8090
75000	6460	6720	6990	7320	7740	8350

Non-SP GIV Landing Speed Schedule

AFM 5.11

The following guidance is provided to assist in the use of the charts in this section:

Tire speed limits occur when touchdown speeds exceeds 182.5 knots (210 MPH). **Tire fuseplug release limits** occur when Brake Kinetic Energy (BKE) for a maximum effort landing (full brake application at touchdown) exceeds 40 MFP, making fuseplug release possible. If brake application is delayed following touchdown, the resulting lower level of BKEs can be determined from **GIV Airplane Flight Manual Appendix C, GIV Brake Kinetic Energy and Carbon Brake Cooling**.

Limits shown in the charts that follow are conservative in nature and represent a combination of worst-case conditions, i.e., maximum temperature at a given altitude plus a 2% downhill runway slope. These limits apply to a nil or headwind condition only.

NOTE: All speeds shown are KCAS.

Weight = 45000 LB			Normal Flaps 39°		Abnormal Flaps 20°		Abnormal Flaps 10°		Abnormal Flaps UP	
Altitude	F39° Shake	F39° Push	V_{APP}	V_{REF}	V_{APP}	V_{REF}	V_{APP}	V_{REF}	V_{APP}	V_{REF}
0	101	95	133	123	136	126	141	131	149	139
2000	101	95	133	123	136	126	142	132	149	139
4000	101	95	133	123	137	127	143	133	151	141
6000	102	95	134	124	138	128	144	134	152	142
8000	103	96	135	125	139	129	146	136	154	144
10000	104	97	136	126	141	131	147	137	156	146
12000	105	98	137	127	142	132	149	139	158	148
14000	106	99	139	129	143	133	150	140	160	150
15000	107	100	139	129	144	134	151	141	161	151

CAUTION: ***Fuseplug Release Possible With Max. Braking*** (hatched cells)

CAUTION: ***Tire Speed Limit*** (grey cells)

Non-SP GIV Landing Speed Schedule, ctd… AFM 5.11

NOTES:

1. See the explanatory text presented on page PC-2 of this section.
2. All speeds shown are KCAS.

Weight = 50000 LB			Normal Flaps 39°		Abnormal Flaps 20°		Abnormal Flaps 10°		Abnormal Flaps UP	
Altitude	F39° Shake	F39° Push	V_{APP}	V_{REF}	V_{APP}	V_{REF}	V_{APP}	V_{REF}	V_{APP}	V_{REF}
0	107	100	140	130	143	133	149	139	157	147
2000	107	100	140	130	143	133	149	139	157	147
4000	107	100	140	130	144	134	150	140	158	148
6000	107	100	140	130	145	135	151	141	160	150
8000	108	101	142	132	147	137	153	143	162	152
10000	109	102	143	133	148	138	155	145	164	154
12000	111	103	144	134	149	139	156	146	166	156
14000	112	104	146	136	151	141	158	148	168	158
15000	112	105	146	136	152	142	159	149	170	160

CAUTION: Fuseplug Release Possible With Max. Braking (hatched cells)

CAUTION: Tire Speed Limit (gray cells)

Weight = 55000 LB			Normal Flaps 39°		Abnormal Flaps 20°		Abnormal Flaps 10°		Abnormal Flaps UP	
Altitude	F39° Shake	F39° Push	V_{APP}	V_{REF}	V_{APP}	V_{REF}	V_{APP}	V_{REF}	V_{APP}	V_{REF}
0	112	105	146	136	149	139	155	145	164	154
2000	112	105	146	136	149	139	155	145	164	154
4000	112	105	146	136	150	140	157	147	166	156
6000	113	105	147	137	152	142	158	148	168	158
8000	114	106	148	138	153	143	160	150	170	160
10000	115	107	149	139	154	144	162	152	172	162
12000	116	108	151	141	156	146	163	153	174	164
14000	117	110	152	142	158	148	165	155	176	166
15000	118	110	153	143	158	148	166	156	177	167

CAUTION: Fuseplug Release Possible With Max. Braking (hatched cells)

CAUTION: Tire Speed Limit (gray cells)

Non-SP GIV Landing Speed Schedule, ctd… AFM 5.11

NOTES:

1. See the explanatory text presented on page PC-2 of this section.
2. All speeds shown are KCAS.

Weight = 60000 LB			Normal Flaps 39°		Abnormal Flaps 20°		Abnormal Flaps 10°		Abnormal Flaps UP	
Altitude	F39° Shake	F39° Push	V_{APP}	V_{REF}	V_{APP}	V_{REF}	V_{APP}	V_{REF}	V_{APP}	V_{REF}
0	117	109	152	142	156	146	162	152	171	161
2000	117	109	152	142	156	146	162	152	171	161
4000	117	109	152	142	157	147	163	153	173	163
6000	118	110	153	143	158	148	165	155	175	165
8000	119	111	154	144	160	150	167	157	177	167
10000	120	112	156	146	161	151	168	158	179	169
12000	121	113	157	147	163	153	170	160	181	171
14000	123	114	159	149	164	154	172	162	184	174
15000	123	115	160	150	165	155	173	163	185	175

CAUTION: Fuseplug Release Possible With Max. Braking (hatched shading)

CAUTION: Tire Speed Limit (grey shading)

Weight = 65000 LB			Normal Flaps 39°		Abnormal Flaps 20°		Abnormal Flaps 10°		Abnormal Flaps UP	
Altitude	F39° Shake	F39° Push	V_{APP}	V_{REF}	V_{APP}	V_{REF}	V_{APP}	V_{REF}	V_{APP}	V_{REF}
0	122	114	158	148	162	152	168	158	178	168
2000	122	114	158	148	162	152	168	158	178	168
4000	122	114	158	148	163	153	169	159	179	169
6000	122	114	159	149	164	154	171	161	181	171
8000	124	116	160	150	166	156	173	163	184	174
10000	125	117	162	152	167	157	175	165	186	176
12000	126	118	163	153	169	159	177	167	188	178
14000	128	119	165	155	170	160	179	169	191	181
15000	128	120	166	156	171	161	180	170	192	182

CAUTION: Fuseplug Release Possible With Max. Braking (hatched shading)

CAUTION: Tire Speed Limit (grey shading)

Non-SP GIV Landing Speed Schedule, ctd… AFM 5.11

NOTES:

1. See the explanatory text presented on page PC-2 of this section.
2. All speeds shown are KCAS.

Weight = 70000 LB			Normal Flaps 39°		Abnormal Flaps 20°		Abnormal Flaps 10°		Abnormal Flaps UP	
Altitude	F39° Shake	F39° Push	V_{APP}	V_{REF}	V_{APP}	V_{REF}	V_{APP}	V_{REF}	V_{APP}	V_{REF}
0	126	118	164	154	167	157	174	164	184	174
2000	126	118	164	154	167	157	174	164	184	174
4000	126	118	164	154	169	159	176	166	186	176
6000	127	119	164	154	170	160	177	167	188	178
8000	128	120	166	156	172	162	179	169	190	180
10000	130	121	167	157	173	163	181	171	193	183
12000	131	122	169	159	175	165	183	173	195	185
14000	132	124	171	161	177	167	185	175	198	188
15000	133	124	172	162	178	168	187	177	199	189

CAUTION:* *Fuseplug Release Possible With Max. Braking (hatched cells)

CAUTION:* *Tire Speed Limit (shaded cells)

Weight = 73200 LB			Normal Flaps 39°		Abnormal Flaps 20°		Abnormal Flaps 10°		Abnormal Flaps UP	
Altitude	F39° Shake	F39° Push	V_{APP}	V_{REF}	V_{APP}	V_{REF}	V_{APP}	V_{REF}	V_{APP}	V_{REF}
0	129	121	167	157	171	161	178	168	188	178
2000	129	121	167	157	171	161	178	168	188	178
4000	129	121	167	157	172	162	179	169	190	180
6000	130	121	168	158	174	164	181	171	192	182
8000	131	123	169	159	175	165	183	173	194	184
10000	132	124	171	161	177	167	185	175	197	187
12000	134	125	173	163	179	169	187	177	199	189
14000	135	126	174	164	180	170	190	180	202	192
15000	136	127	175	165	181	171	191	181	203	193

CAUTION:* *Fuseplug Release Possible With Max. Braking (hatched cells)

CAUTION:* *Tire Speed Limit (shaded cells)

Non-SP GIV Landing Distance Using Twin-Engine Reverse Thrust Only (No Braking) OM 07-01-80

The table on the following page shows landing distances when using reverse thrust only to bring the aircraft to a stop. The distances shown below assume reverse thrust is used to 20 knots with stowage by 10 knots.

Conditions:

- Two-Engine Reverse Thrust Only
- No Slope
- No Wind
- Standard Day Temperature
- AUTO Ground Spoilers
- No Runway Surface Contamination Accumulation
- Full Reverse Thrust To 20 Knots
- Stowage By 10 Knots
- Minimal Braking Below 10 Knots
- Flaps 39°

NOTE: **Airplane Flight Manual** procedures recommend that cancellation of thrust reversers be initiated by 70 knots so as to be completely cancelled by the time normal taxi speed is achieved. If landing runway conditions will result in compromised braking performance, this table may be used to provide additional information for pilot judgment.

Non-SP GIV Landing Distance Using Twin-Engine Reverse Thrust Only (No Braking), ctd…

OM 07-01-90

Landing Distance (Feet)						
ALT (Ft)	**Gross Weight (lb)**					
	74,600	**73,200**	**70,000**	**66,000**	**65,000**	**60,000**
15,000	15,166	14,850	14,122	13,209	12,985	11,890
14,000	14,346	14,045	13,359	12,501	12,287	11,264
12,000	12,837	12,569	11,960	11,204	11,019	10,112
10,000	11,495	11,255	10,719	10,052	9,886	9,082
8,000	10,524	10,309	9,823	9,215	9,068	8,342
6,000	9,847	9,649	9,199	8,639	8,500	7,831
4,000	9,265	9,081	8,665	8,144	8,015	7,395
2,000	8,771	8,601	8,213	7,727	7,608	7,028
0	8,320	8,161	7,795	7,343	7,230	6,692

Landing Distance (Feet)					
ALT (Ft)	**Gross Weight (lb)**				
	58,500	**55,000**	**50,000**	**45,000**	**40,000**
15,000	11,564	10,813	9,787	8,776	7,827
14,000	10,952	10,250	9,282	8,330	7,440
12,000	9,837	9,212	8,359	7,516	6,732
10,000	8,841	8,289	7,532	6,788	6,093
8,000	8,122	7,623	6,940	6,270	5,648
6,000	7,630	7,169	6,541	5,925	5,358
4,000	7,207	6,784	6,204	5,638	5,116
2,000	6,855	6,458	5,920	5,398	4,921
0	6,530	6,160	5,657	5,178	4,744

Non-SP GIV Aircraft Classification Number (ACN)

GIV-GER-481

Aircraft Classification Number (ACN) is a number expressing the relative effect of an aircraft on a pavement for a specified subgrade category. ACN values are calculated for both flexible and rigid pavement. If the aircraft gross weight and runway subgrade strength are known, the ACN value can be determined from the charts on the following pages.

Pavement Classification Number (PCN) is a number expressing the bearing strength of a pavement for unrestricted operations. It is reported in the Jeppesen charts in a format such as **24/F/C/Y/T**, where:

24 is the PCN

F is the type of pavement, where:
- **R** = Rigid
- **F** = Flexible

C is the subgrade strength, where:
- **D** = Ultra Low
- **C** = Low
- **B** = Medium
- **A** = High

Y is the tire pressure, where:
- **W** = High, no pressure limit
- **X** = Medium, limited to 217 psi
- **Y** = Low, limited to 145 psi
- **Z** = Very Low, limited to 73 psi

T is the PCN classification, where:
- **T** = Technical Evaluation
- **U** = Aircraft Experience

ACN values must be less than or equal to the airport PCN for unrestricted use. ACN input variables are gross weight, percent load on main wheels, wheel spacing and maximum tire pressure.

Non-SP GIV ACN, ctd… GIV-GER-481

Example 1:

Given: Gross Weight = 70,000 lb, PCN = 24/F/C/Y/T

Where:	PCN	=	24
	F	=	Flexible Pavement
	ACN	=	22 (from charts)
	C	=	Low Subgrade Strength
	Y	=	145 psi Tire Pressure Limit
	T	=	Technical Evaluation

Thus: ACN less than PCN, but tire pressure becomes a restriction.

Example 2:

Given: Gross Weight = 70,000 lb, PCN = 80/R/B/W/T

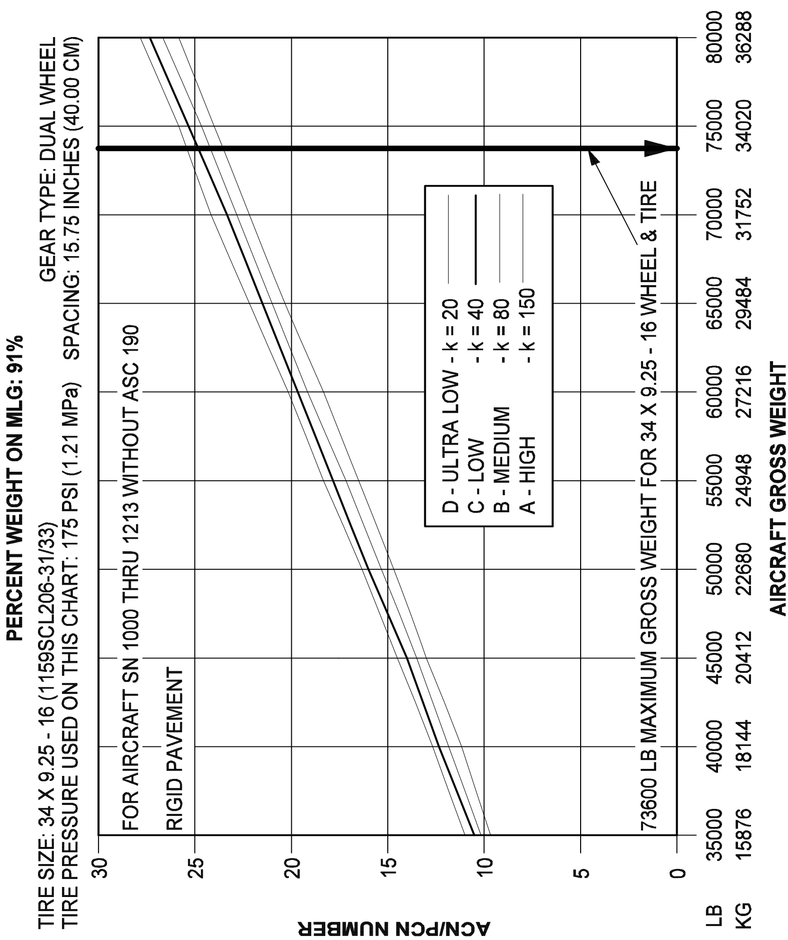
Where:	PCN	=	80
	R	=	Rigid Pavement
	ACN	=	22 (from charts)
	B	=	Medium Subgrade Strength
	W	=	No Tire Pressure Limit
	T	=	Technical Evaluation

Thus: ACN less than PCN, no tire pressure limit. Suitable runway.

Main Landing Gear Tire Pressure vs. Gross Weight: 1159SCL206-31 and -33 Tires

Non-SP GIV ACN, ctd…

GIV-GER-481

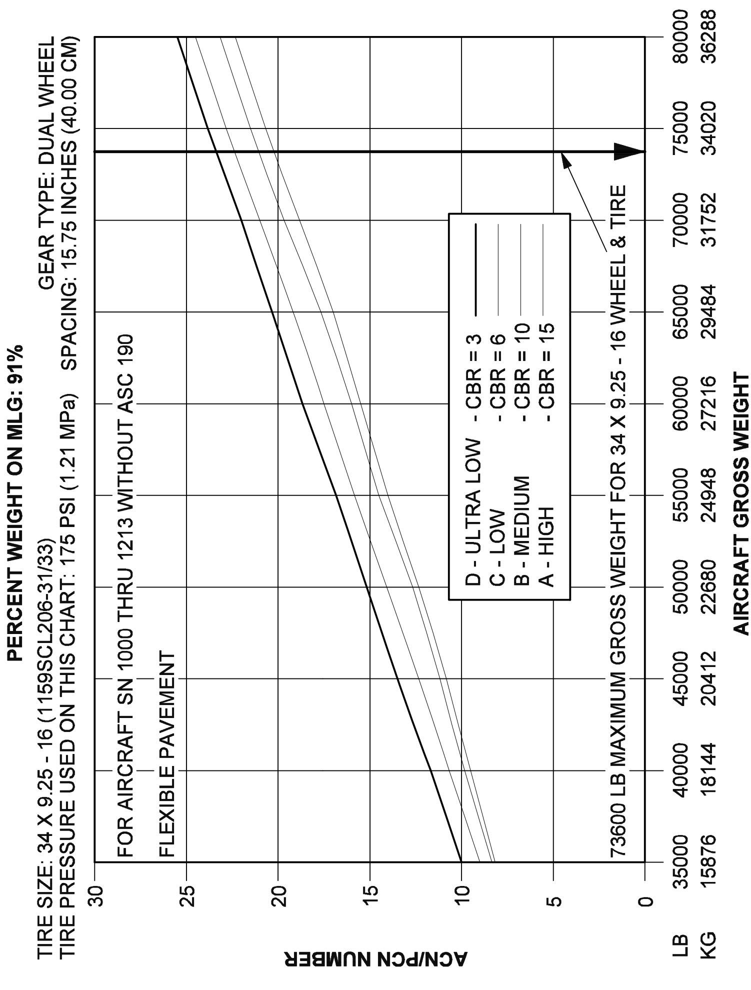


26584C02

NOTE: Use of these charts is to be with reference to **GIV Operating Manual Chapter 6: Approach and Landing Characteristics and Procedures**.

Non-SP GIV ACN, ctd…

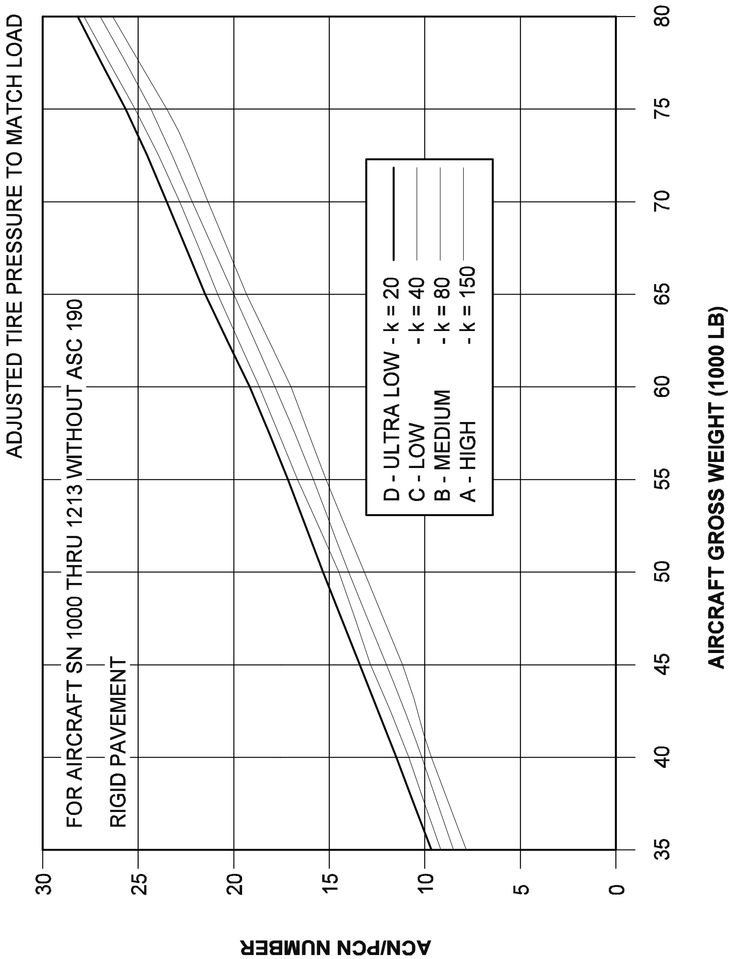
GIV-GER-481



26585C01

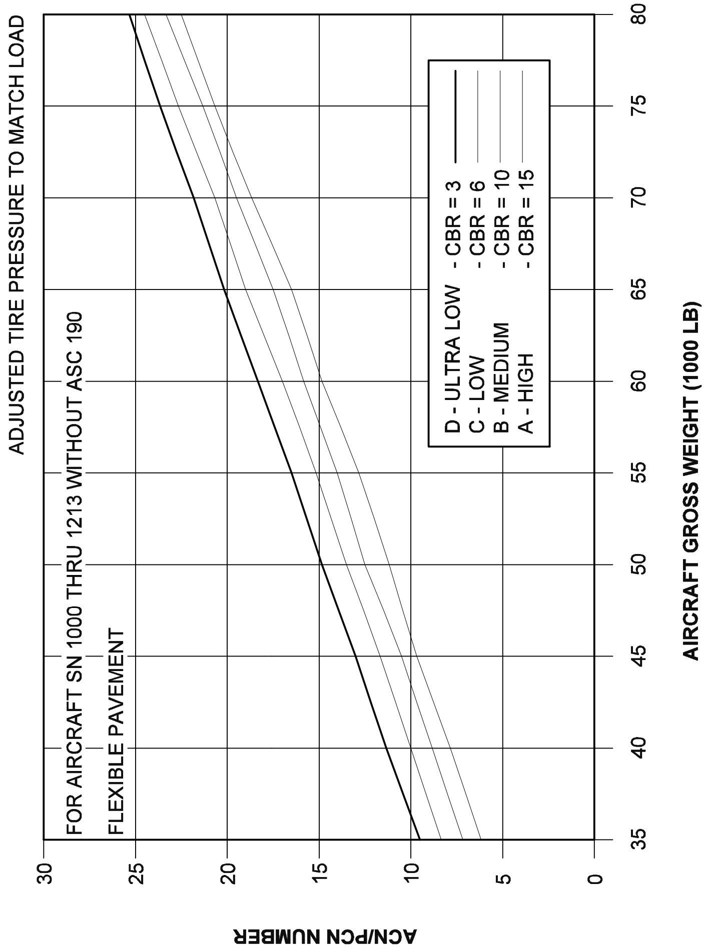
NOTE: Use of these charts is to be with reference to **GIV Operating Manual Chapter 6: Approach and Landing Characteristics and Procedures**.

Non-SP GIV ACN, ctd…



26588C02

NOTE: Use of these charts is to be with reference to **GIV Operating Manual Chapter 6: Approach and Landing Characteristics and Procedures**.



26589C01

NOTE: Use of these charts is to be with reference to **GIV Operating Manual Chapter 6: Approach and Landing Characteristics and Procedures**.

Non-SP GIV Equivalent Single Wheel Loading (ESWL)

OM 06-05-90

Introduction:

One consideration in operating Gulfstream aircraft is the strength of runway and taxiway pavements in relation to aircraft operating weight. This can limit operational weights in some airports. One common method of evaluating an aircraft for a given runway is the Equivalent Single Wheel Loading (ESWL). ESWL accounts for the extra tire flotation for multi-wheel landing gear struts such as the dual wheel struts used on the Gulfstream aircraft. This section provides information on how to compute ESWL for the G400, G300, GIV-SP and Non-SP GIV airplanes.

G400, G300, GIV-SP and Non-SP GIV Main Landing Gear Parameters:

Max Ramp Weight	MLG Tire Size	Tire Spacing	Max Tire Pressure	Reduction Factor	Maximum ESWL
(pounds)	**(inches)**	**(inches)**	**(psi)**	**----**	**(pounds)**
75,000	34 × 9.5	16.0	190	1.23	27,439

The reduction factor in the table above assumes a rigid pavement with a radius of equivalent stiffness of 40 inches, roughly equivalent to a 13.5 inch thick concrete slab. Thinner pavements would give higher reduction factors, so the factors presented are conservative.

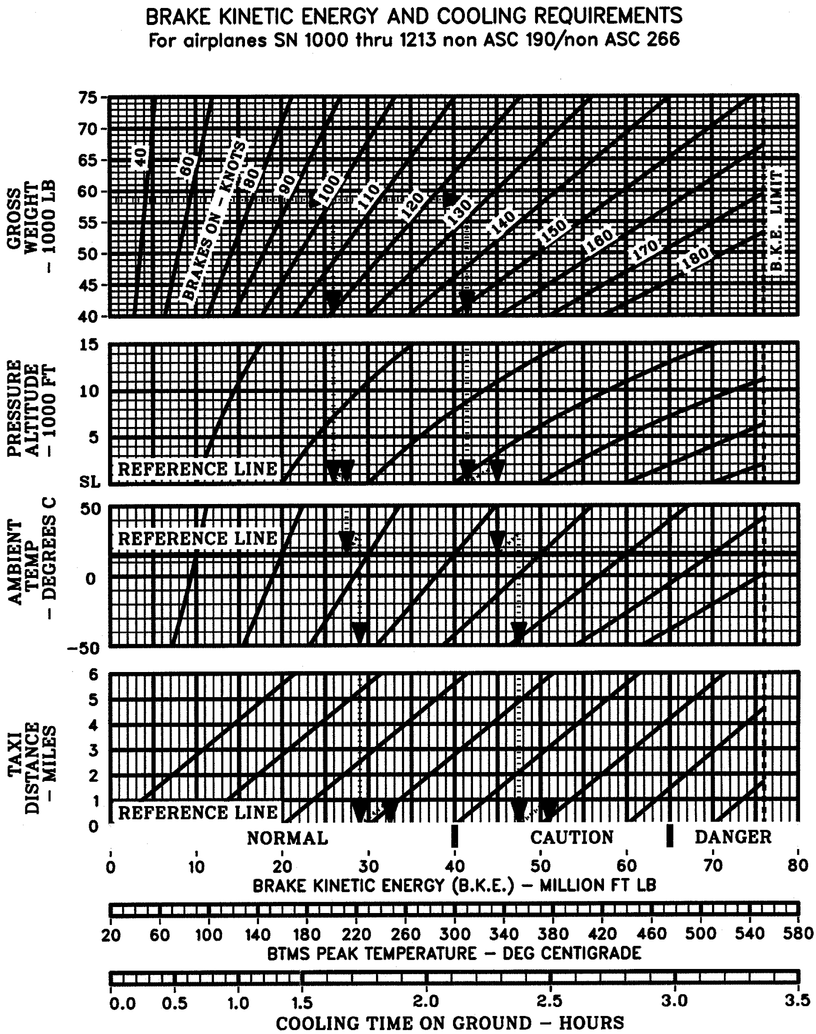
ESWL Computation for Lower Operating Weights:

ESWL can be computed for lower operating weights as follows:

ESWL = (Gross Weight) × (0.9) × (0.5) ÷ (Reduction Factor)

Non-SP GIV Brake Kinetic Energy / Carbon Brake Cooling

AFM APP. C



NOTE: Use of these charts is to be with reference to **GIV Airplane Flight Manual Appendix C: Brake Kinetic Energy and Carbon Brake Cooling**.

Non-SP GIV Abnormal Landing Field Length Table GAC

Non-SP GIV Abnormal Landing Field Length Table						
Reference Landing Field Length (Feet)		Corrected, Factored (x 1.67), Dry Runway Landing Field Length (Feet) For Abnormal Landing Configuration				
39°	**Flaps**	39°	39°	20°	10°	0°
OPERATIVE	**Anti-Skid**	OPERATIVE	INOP	OPERATIVE	OPERATIVE	OPERATIVE
AUTO	**Speedbrakes**	MANUAL	AUTO or MAN	AUTO	AUTO	AUTO
4800		4800	8000	4620	4800	4960
5000		5000	9000	4800	5000	5200
5200		5200	10000	4990	5210	5440
5400		5400	11000	5180	5420	5680
5600		5600	12000	5360	5630	5920
5800		5800	13000	5550	5840	6160
6000		6000	14000	5740	6040	6400
6200		6200	15000	5920	6250	6640
6400		6400	16000	6110	6460	6880
6600		6600	17000	6300	6670	7120
6800		6800	18000	6480	6880	7360
7000		7000	19000	6670	7080	7600
7200		7200	20000	6860	7290	7840
7400		7400	21000	7040	7500	8080
7600		7600	22000	7230	7710	8320
7800		7800	23000	7420	7920	8560
8000		8000	24000	7600	8120	8800
8200		8200	25000	7790	8330	9040
8400		8400	26000	7970	8540	9280

CAUTION: THE GIV MAXIMUM LANDING WEIGHT IS 58,500 LB (26,535 KG).

NOTES:

1. Reference Landing Field Length in first column is a FAR 135 factored, ISA-Day, dry runway distance for a normal landing configuration (Flaps 39°, Anti-Skid operative and either Automatic or Manual deployment of speed brakes/ground-spoilers).
2. For intended destination wet, multiply landing field lengths above by 1.15.
3. For unfactored landing distances, multiply field lengths above by 0.60.
4. Field lengths seen above are based on no wind or runway slope, but may be conservatively used with headwinds or uphill runway slopes.
5. For all abnormal landing configurations (0°, 10°, and 20°) with manual speed brake deployment, increase the flaps 0° landing distance (based on auto ground spoiler deployment) by 10%.

Warning (Red) Messages and Annunciations Index

Warning (Red) Messages and Annunciations AFM 4A

Message:	Cause(s):	Corrective Action:
ACFT CONFIGURATION	Check handle positions for: • Flap • Speed Brake • Landing Gear	Correct configuration.
AFT BAG SMOKE (SPZ 8400 equipped) SWLP: SMOKE DETECT	Smoke detected in aft baggage compartment.	See **Airplane Interior Fire/Smoke/Fumes**, page ED-6.
AFT EQUIP HOT SWLP: AFT EQUIP HOT	Aft equipment area temperature above 200°F (93°C). Possibility exists that high pressure duct has blown or that fire is in progress.	1. Identify faulty side by checking for high TGT, high fuel flow, low EPR or low (abnormal) bleed pressure. 2. Shut off faulty side bleed pressure switch. 3. Check isolation valve closed. 4. Descend to 41,000 ft. 5. Monitor message. 6. See **Aft Equipment Hot**, page ED-15.
APU FIRE SWLP: APU FIRE	APU fire detected.	1. APU Overspeed Test - PRESS 2. APU Master Switch - OFF. 3. APU fire extinguisher - PRESS. 4. See **APU Fire**, page ED-5.
APU LOAD (SPZ 8400 equipped with ELWS)	APU electrical load for operations above 30,000 ft. not in limits.	Select CABIN MASTER OFF.
CABIN DFRN - 9.8	Cabin differential press approaching upper limit (9.8).	Raise cabin altitude. Increase rate of climb of cabin, if required.

Message:	Cause(s):	Corrective Action:
CABIN PRESSURE LOW SWLP: CABIN PRESS LOW	Cabin altitude has climbed above limits (9250 ft. ±750 ft.).	1. **Check cabin pressure controls and indications**. If the outflow valve is closed and cabin altitude is still climbing, a baggage door seal or main entrance door seal may be causing the loss of pressurization. 2. **Select COWL ANTI-ICE ON**. Increase bleed air pressure by selecting COWL ANTI-ICE ON or by increasing engine power. Cabin rate-of-climb can be controlled by selecting COWL ANTI-ICE ON and /or by increasing engine power to maximum continuous setting at higher altitudes, thereby increasing available bleed pressure above 35 psi. 3. **Descend as necessary**. If unable to attain 35 psi or greater, or if selecting cowl ant-ice ON results in COOL TURB HOT message, descend to lower altitude until cabin rate-of-climb is controllable. Select cowl anti-ice OFF if COOL TURB HOT message persists. 4. Use oxygen, as appropriate.
CHECK PFD CHECK PFD 1-2 (SPZ 8400 equipped with ELWS)	Hazardously misleading information on both PFDs.	Check pitch, roll, airspeed, and altitude on both PFDs to verify information is correct.
DAU 1-2 MISCMP-MSG	Miscompare between data channels of a serious nature.	Attempt to identify faulty channel then switch to sensor page and select good channel of respective DAU.

Warning (Red) Messages and Annunciations, ctd… AFM 4A

Message:	Cause(s):	Corrective Action:
DOOR BAGGAGE (Deleted by ASC 415. Changed to Amber Message for SPZ 8000/8400 airplanes and 1390 and subs.) DOOR MAIN SWLP: CABIN DOORS	Main or baggage door not locked.	1. Reduce cabin pressure differential. 2. Check locking handles for security. 3. Exercise care when in vicinity of doors. 4. If main door does not appear secure, land as soon as possible. 5. If doors appear secure, continue flight.
ENGINE EXCEEDANCE (SPZ 8400 equipped) (Added by ASC 415 for SPZ 8000 airplanes)	LP, HP, or TGT above limit.	Retard throttle(s) to achieve power setting within limits. Shut down engine if exceedance persists with throttle at idle.
ENG FIRE LOOP ALERT SWLP: FIRE DET LOOP	Engine fire loop senses fire.	1. If fire handle and HP cock are illuminated, fire warning is valid – execute engine fire procedure. See **Engine Fire In Flight** (page ED-3) or **Engine Fire On Ground** (page ED-4). 2. If fire handle and HP cock are not illuminated, check Fire Detection Fault Panel - perform fire test. See **Engine Fire Warning System Malfunction**, page ED-12and/or **Fire Detection System Fault**, page ED-13. 3. If test is good, disable faulty loop. 4. If test is bad, execute engine fire procedure. See **Engine Fire In Flight**, page ED-3or **Engine Fire On Ground**, page ED-4.

Warning (Red) Messages and Annunciations, ctd… AFM 4A

Message:	Cause(s):	Corrective Action:
ENGINE HOT, L-R SWLP: L ENGINE HOT R ENGINE HOT	Engine cooling air temperature above 860°F (460°C).	See **Engine Hot**, page ED-14.
FLAME DETECT SWLP: FLAME DETECT	Flame in area annunciated by illuminated annunciation.	See **Fire / Overheat / Smoke Index**, page ED-1, for procedure corresponding to area in which flame is detected.
FUEL FILTER, L-R SWLP: L FUEL FILTER R FUEL FILTER	Fuel filter clogging.	1. Retard power lever to 75% HP. 2. Check that fuel temperature increased to above +5°, and hold this condition for 10 seconds before restoring engine power. 3. Shut down engine if operation becomes erratic. ***NOTE:*** If fault shows on both engines, apply above procedure to only one engine at a time. Land as soon as possible.
FUEL PRESS LOW, L-R SWLP: L FUEL PRESS R FUEL PRESS	Fuel pressure at inlet to high pressure fuel pump is less than 15 psi or both fuel boost pumps on one side have been turned off with crossflow valve CLOSED.	1. Check that boost pumps are ON and functioning. 2. Check crossflow valve position. 3. Check for erratic fuel flow indication. 4. Shut down engine if operation becomes erratic.

Message:	Cause(s):	Corrective Action:
GND SPOILER SWLP: GND SPOILER	Failure of ground. spoiler component or deployed ground spoiler panel.	Immediately select ground spoiler arming switch OFF. See **Ground Spoiler Failure**, page EE-4.
FWD LAV SMOKE DETECT (SPZ 8400 equipped)	Smoke detected in FWD LAV area or radio rack area.	See **Airplane Interior Fire/Smoke/Fumes**, page ED-6.
OIL PRESS LOW, L-R SWLP: L OIL PRESS R OIL PRESS	Indicated oil pressure below 16 psi.	1. Check oil pressure reading. Minimum oil pressure 16 psi below 76% HP RPM. 2. Shut down engine if pressure abnormally low.
PYLON HOT, L-R SWLP: L PYLON HOT R PYLON HOT	Pylon temperature is above 325°F (163°C).	1. Appropriate bleed air switch OFF. 2. Check isolation valve closed. 3. Descend to 41,000 ft. Monitor message. 4. Prepare for possible engine shutdown. 5. If problem persists, land as soon as possible. See **Pylon Hot**, page ED-14.
RADIO RACK SMOKE (Added By ASC 415 for SPZ 8000/8400 airplanes and SN 1390 and subs.) SWLP: SMOKE DETECT	Smoke detected in radio rack area.	See **Airplane Interior Fire/ Smoke/Fumes**, page ED-6.

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Message:	Cause(s):	Corrective Action:
REV UNLOCK, L-R SWLP: REV UNLOCKED	Thrust reverser has become unlocked.	1. Ensure thrust reverse lever is stowed and retard affected engine to idle. 2. Reduce airspeed to less than 200 KCAS and depress T/REV EMERG STOW switch. 3. See **Reverse Thrust Unlock or Deploy During Flight**, page EC-14.
CAUTION: DO NOT ATTEMPT TO DEPLOY AND RESTOW THE AFFECTED REVERSER. DAMAGE CAN OCCUR TO AN ACTUATOR'S PRIMARY LOCK IF IT IS UNLOCKED WITHOUT MAINTAINING STOW SIDE PRESSURE ABOVE 1200 PSI. THE ACTUATOR COULD BE DAMAGED, REQUIRING REPLACEMENT AND/OR LOCKDOWN PROCEDURES MORE RESTRICTIVE THAN THE INITIAL FAILURE WOULD DICTATE.		
SMOKE DETECT SWLP: SMOKE DETECT	Smoke in area annunciated by illuminated indication.	See **Airplane Interior Fire/ Smoke/Fumes**, page ED-6.

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Annunciation:	Cause(s):
MASTER WARNING reset switch "W" legend (red) illuminated on Pilot's / Copilot's Master Warning and Caution Lights Panel. Triple chime aural tone sounds.	A new WARNING (red) message is displayed on CAS. The new message will be displayed flashing on the top of the WARNING messages stack.
Warning horn sounds. (SPZ-8000 Equipped Aircraft) Klaxon™ (Hi-Lo, Hi-Lo) sounds. (SPZ-8400 Equipped Aircraft)	Landing gear unsafe.
Red LOOP A or LOOP B segments of L ENG or R ENG FIRE TEST switches illuminated. Red light in L / R Fire Handle. Red light in L / R HP FUEL COCK handle.	An engine fire loop senses fire.
Red APU FIRE light on APU control panel.	APU fire sensors detect fire.
Red APU LOAD light above Display Unit (DU) 2 or 5 (SPZ-8400 Equipped Aircraft)	APU electrical load for operations above 30,000 ft. not in limits.
Red BAG COMPT SMOKE light above DU 5. (SPZ-8000 Equipped Aircraft)	Smoke detected in baggage compartment.
Red NO GND SPOILERS light on windshield center post.	Failure of ground spoiler component or deployed ground spoiler panel.
Red chevron illuminated on pilot's/copilot's AOA indexer.	AOA for approach and landing is too high.
Red light in landing gear control handle.	Landing gear control handle position does not agree with landing gear door position or landing gear position.
White REV UNLOCK light above DU 2 or 5.	Thrust reverser unlocked.
White REV DEPLOY light above DU 2 or 5.	Thrust reverser deployed.

Warning (Red) Messages and Annunciations, ctd… OM 04-02-20

Annunciation:	Cause(s):
Red light illuminated above differential pressure indicator.	Cabin differential press approaching upper limit (9.8) psi.
Red light illuminated above L COWL or R COWL ANTI-ICE pressure indicator.	Associated cowl anti-ice pressure has exceeded 60+2 psi.

Other Warning Annunciations and Procedures AFM 4A

Annunciation:	Cause(s):	Corrective Action:
Red fuel tank temperature digits on Fuel synoptic page.	Fuel tank temperature is +54° C or higher or -40° C or lower.	Do not dispatch or takeoff with fuel tank temperature at or above +54° C. If airborne and fuel tank temperature is at or below -40° C, descend to altitude where SAT is -60° C or warmer. Remain at this altitude until the fuel tank temperature increases by 2 or 3 degrees.

Notes

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Message:	Cause(s):	Corrective Action:
AC PWR FAIL, L-R	AC output from converter has dropped off line.	1. Check engine idle speed. 2. Select ELECTRIC MASTER -- LEFT or RIGHT PWR to OFF ten (10) seconds, then ON. 3. If unable to RESET, place switch to OFF position. 4. See **Alternator / Converter Failure – Single**, page EA-8.
AHRS COOL FAIL (SPZ 8000 equipped)	AHRS cooling fan has failed.	Illuminates when AHRS or IRS 3 is first turned on (5 seconds) and AHRS / IRS is in self-test. If message illuminates at other times, shut down AHRS / IRS 3.
ALT BRG FAIL, L-R	Alternator main bearing has failed and is operating on auxiliary bearing.	Operation on auxiliary bearing can continue for 15 hours at full load or 50 hours at no load. Light will remain illuminated. Time of occurrence should be recorded.
ALT FUEL FAIL, L-R	Alternate boost pump has failed.	See **Fuel Boost Pump Failure**, page EF-17.
ALT HOT, L-R	Alternator temperature is above 250°F (121°C).	1. Select ELECTRIC MASTER -- LEFT or RIGHT PWR to OFF. 2. Check EVM. 3. See **Alternator Overheat**, page ED-16.
ALT MODE OFF (Deleted by ASC 415 for SPZ 8000/8400 airplanes and SN 1390 and subs.)	Autopilot pitch wheel has been moved while in altitude hold mode or altitude preselect has been reset while in ASEL CAP mode. Message will time out in 5 seconds.	Check altitude modes and commands.

Message:	Cause(s):	Corrective Action:
ANTI-SKID FAIL (Brake-By-Wire)	Normal anti-skid control circuit or other failure: system has switched to open loop pulsed anti-skid control. Power switch selected OFF.	1. Check that ANTI SKID ON / OFF switch is ON. 2. If ON, see **Anti-Skid Failure (Brake-By-Wire)**, page EB-13.
ANTI-SKID FAIL (HMAB)	Miscompare in 28 VDC power supplies or in nutcracker switches. ANTI SKID switch OFF or system circuit problems. Auxiliary system fails to energize or pressure fails to rise within 3 seconds after brake pedals are depressed.	See **Anti-Skid Failure (HMAB)**, page EB-7.
AOA HEAT 1-2 FAIL	Angle-of-attack probe heater failed.	Check circuit breaker (AOA PRB HTR #1: CP, L-14; AOA PRB HTR #2: CP, M-14.) If normal, avoid icing conditions if possible. If flight in icing conditions is unavoidable, pull appropriate stall warning computer circuit breaker (STALL WARN CMPTR #1: CPO, A-11; STALL WARN CMPTR #2: CPO, B-11) and monitor other system. Full stall barrier protection is provided by the operative system.
AP OFF	Autopilot disconnected by other than normal means.	Press autopilot disconnect button to clear message, or re-engage autopilot.

Caution (Amber) Messages and Annunciations, ctd… AFM 3A

Message:	Cause(s):	Corrective Action:
AP TRIM FAIL	Autotrim function of AFGCS has failed.	Check pitch trim switch engaged (light out). If out: 1. Grasp yoke securely (expect out of trim condition), then 2. Disconnect autopilot, then 3. Retrim, then: 4. Attempt to determine problem.
APU ALT BRG FAIL	Alternator main bearing has failed and the alternator is operating on auxiliary bearing.	1. Operation on auxiliary bearing can continue for 15 hours at full load or 50 hours at no load. 2. Light will remain illuminated. 3. The time of occurrence should be recorded.
APU ALT HOT	APU alternator temperature. above 300° F (149° C).	Shut off APU alternator with ELECTRIC MASTER AUX PWR switch.
APU LOAD (SPZ 8400 equipped)	APU electrical load for operation above 30,000 ft. not in limits.	Adjust electrical load up or down as necessary.
APU MASTER WARN	APU master switch ON but APU is not running.	Turn master switch OFF or start APU.
APU MASTER WARN (ASC 465: 36-150[G] APU)	APU ECU has detected a fault.	Log for maintenance action.
AUX AC POWER FAIL	Power output from APU ALT has failed or dropped off line.	1. Select AUX PWR switch to OFF ten (10) seconds, then ON. 2. If condition remains same, turn AUX PWR switch OFF.

Message:	Cause(s):	Corrective Action:
AUXILIARY HYD HOT	Auxiliary hydraulic pump case temperature above 300° F (149° C).	Turn off auxiliary hydraulic pump, if practicable.
BAGGAGE DOOR (SN 1000-1389 having ASC 415, SN 1390 & subs.)	Baggage door is open or unlocked.	Close and lock baggage door as required.
BATT 1-2 CHGR FAIL	Battery or battery charger has failed or the input power circuit breaker is open.	Check L/R BATT CHGR circuit breakers on PDB: 1. If open, close circuit breaker. 2. If light remains on, deactivate battery charger by pulling CB. Light will remain ON. 3. See **Battery or Battery Charger Failure**, page EA-21.
BATT HOT	L or R battery temp at or above 150°F.	1. Select hot battery OFF for remainder of flight. 2. Log for maintenance action.
BATT ON BUS **DC ESS ON BATT** (SPZ-8000 airplanes having ASC 415.)	Essential DC Bus powered by batteries only.	See **Essential DC Bus On Battery Power**, page EA-21.
BATT WARM Message active only if optional Battery Temperature Indicator system is installed. May be caution or advisory message depending on message module programming.	L (or R) battery temp at or above 120° F.	1. Monitor battery temperature and select OFF if temperature reaches 140° F. 2. Log for maintenance action.

Caution (Amber) Messages and Annunciations, ctd… AFM 3A

Message:	Cause(s):	Corrective Action:
BLEED AIR HOT, L-R	Bleed air temperature is above 550°F (288°C).	1. Switch appropriate bleed air valve OFF. 2. When hot light is extinguished, open isolation valve and descend to 41,000 ft.
BLEED AIR OFF, L-R (SPZ-8400 airplanes having ASC 422/422A; SN 1445 & subs.)	Bleed air is selected OFF.	Select bleed air ON as required.
BLEED CONFIG (SPZ-8000 and SPZ-8400 airplanes having ASC 422/422A; SN 1445 & subs.)	Isolation valve is open with engine bleed(s) selected ON.	1. Evaluate bleed configuration. 2. If isolation valve is open for procedural requirements, select engine bleed(s) OFF as required.
BLEED PRESS HI, L-R	Bleed air pressure has exceeded 75 psi.	1. Switch appropriate bleed air valve OFF. 2. Check isolation valve closed. 3. Descend to 41,000 ft. 4. When **PRESS HI** message is extinguished, open isolation valve.
BRAKE FAIL **(Brake-By-Wire)**	Failure of brake system, BCS cannot provide braking.	See **BRAKE FAIL Message (Brake-By-Wire)**, page EB-8.
BRAKE FAIL **(HMAB)**	Loss of combined and auxiliary pressure. No braking available.	See **BRAKE FAIL Message (HMAB)**, page EB-4.

Caution (Amber) Messages and Annunciations, ctd… AFM 3A

Message:	Cause(s):	Corrective Action:
BRAKE OVHT	One or more brake assemblies exceed overheat limit: 1. 400° C for airplanes SN 1156 thru 1213 and airplanes with ASC 167. 2. 625° C for SN 1214 and subs and 1000 thru 1213 with ASC 346.	See **BTMS OVHT Light On or BRAKE OVHT Message (Brake By Wire)**, page EB-11. **OR:** See **BTMS OVHT Light On or BRAKE OVHT Message (HMAB)**, page EB-5.
BRAKE PEDAL **(Brake-By-Wire)**	Malfunctioning brake pedal.	1. Verify inoperative pedal by using BRAKE NUTCRKR ORIDE switch and observing applied brake pressure for each brake pedal. 2. See **BRAKE PEDAL Message (Brake-By-Wire)**, page EB-8.
CABIN DFRN-9.6	Cabin differential pressure has reached 9.6 psi.	1. Raise cabin altitude. 2. Increase cabin rate of climb, if required. 3. Switch to manual pressurization control, if required. See **Loss of Automatic Pressurization Control**, page EH-6.
CABIN OXYGEN ON	Passenger oxygen system actuated by either manual or automatic means.	1. No action required if passengers require cabin oxygen mask deployment. 2. If masks deployed in error, repack masks and reset system.

Message:	Cause(s):	Corrective Action:
CABIN PRES MANUAL	Cabin pressurization controller has been switched to manual control automatically or manually.	1. Cycle AUTO/MANUAL switch to AUTO; check system. 2. If OK, leave switch in AUTO. 3. If not, switch to MANUAL and control cabin pressurization with MANUAL CONTROL knob. See **Loss of Automatic Pressurization Control**, page EH-6.
CHECK DU 1-2-3-4-5-6	Information on indicated display unit may be incorrect.	Verify data on indicated display unit and if incorrect select different sensor.
CHECK HYD QUANTITY (SPZ 8400 equipped)	Either Combined and/or Flight Hydraulic System quantity is low.	1. Select hydraulic synoptic page and verify which quantity is low. If a leak is evident, expect system to fail. 2. For loss of Combined Hydraulic fluid, see **Combined Hydraulic System Failure – Loss of Pressure and Fluid**, page EF-8. 3. For loss of Flight Hydraulic fluid, see **Flight Hydraulic System Failure – Loss of Pressure and / or Fluid**, page EF-11. 4. For loss of both systems, see **Dual Hydraulic System Failure**, page EF-4.
CHECK PFD 1-2 (SPZ 8400 equipped)	Erroneous information on Primary Flight Displays (PFDs).	1. Check pitch, roll, airspeed and altitude on both PFDs. 2. Compare with standby instruments to verify information is correct.
CHECK V SPEEDS	The flight management systems have computed V-speeds that are different.	Compare V-speeds, verify initialization and FMS status for mode of operation.

Message:	Cause(s):	Corrective Action:
CMB HYD FAIL	Failure of Combined Hydraulic System pressure.	1. Check Combined Hydraulic pressure and quantity. 2. For loss of Combined Hydraulic pressure **and** fluid, see **Combined Hydraulic System Failure – Loss of Pressure and Fluid**, page EF-8. 3. For loss of Combined Hydraulic pressure **only**, see **Combined Hydraulic System Failure – Loss of Pressure Only**, page EF-10.
CAUTION: STALL BARRIER PROTECTION IS NOT AVAILABLE WITH LOSS OF COMBINED HYDRAULIC FLUID.		
CONV FAN FAIL, L-R	A converter cooling fan has failed.	1. Record time of failure. 2. Continued operation for maximum of 25 hours is permitted. 3. Subsequent takeoffs are permitted upon verification that only one cooling fan has failed. 4. Operation with more than one failed cooling fan may result in damage to and/or automatic shutdown of converter. 5. Light will remain illuminated.
NOTE: With ASC 285 incorporated, message will remain displayed. Display of this message, whether momentary or permanently set, requires a maintenance action.		
CONV HOT, L-R	Converter temperature is above 220°F (104°C).	1. Turn ELECTRIC MASTER, LEFT or RIGHT PWR OFF. 2. Light will remain on until temperature reduces to 190°F (88°C). 3. Try to turn converter back on, if possible (after light is OFF). 4. Try reducing electrical load on affected converter. 5. If illumination recurs, turn OFF and do not reinstate.

Caution (Amber) Messages and Annunciations, ctd… AFM 3A

Message:	Cause(s):	Corrective Action:
COOL TURB HOT, L-R	Cooling turbine discharge air above 450°F (232°C).	1. On ground, ECS system will automatically shut down. 2. In flight, see **Left or Right Cooling Turbine Hot**, page EH-11.
COWL A/I OVHT, L-R	Engine cowl temperature is above 662°F (350°C).	1. Turn COWL ANTI-ICE OFF. 2. If message persists, TURN WING ANTI-ICE OFF. 3. If message persists, turn associated BLEED AIR OFF. 4. Depart icing conditions.
COWL PRESS LOW, L-R	Cowl anti-ice press. is less than 10 ±1 psi. *(4 psi ±1 for airplanes SN 1190 and subs. and SN 1000 thru 1189 with ASC 243).*	1. Check engine power setting. 2. Increase thrust setting to extinguish message if cowl anti-ice pressure is less than 4 psi. 3. If cowl anti-ice pressure gage is inoperative, increase thrust to extinguish message.
CPL DATA INVALID	With FMS as coupled NAV source, airplane has flown off end of flight plan, resulting in autopilot reverting to heading hold and pitch hold (If VNAV was active).	Select any autopilot lateral and vertical mode.
CREW OXYGEN OFF (SN 1290 & subs)	Crew oxygen is shut OFF at the bottle.	1. Verify bottle is OPEN at the bottle. 2. If bottle is OPEN, notify maintenance prior to dispatch.
DAU 1-2 MISCMP ENG	Engine data miscompare between DAU 'A' and 'B' channels.	Compare engine data displayed with DAU 'A' and 'B' channels. Select good channel.

Message:	Cause(s):	Corrective Action:
DAU 1-2 MISCMP MSG	EICAS amber message miscompare between DAU 'A' and 'B' channels.	Compare amber messages displayed with DAU 'A' and 'B' channels. Select good channel.
DC POWER FAIL, L-R	DC output from converter has dropped off line.	1. Check engine idle. 2. Select ELECTRIC MASTER -- LEFT or RIGHT PWR to OFF ten (10) seconds, then ON. 3. If unable to RESET, continue operation, but monitor condition frequently. 4. If any unusual condition occurs, place ELECTRIC MASTER, LEFT or RIGHT PWR to OFF position. 5. See **Alternator / Converter Failure - Single**, page EA-8.
DOOR SEAL PRES LOW (SPZ-8400 equipped Airplanes having Advance Warning System for the GIV Door Seal System.)	Main entrance door seal and/or baggage door seal pressure is less than 2.5 +/- 0.5 psig relative to cabin pressure.	In flight – Check engine power setting. Increase thrust setting to extinguish message. If message does not extinguish, monitor cabin altitude. Check door seals for possible leaks. If leaks detected, descend to safe altitude. If loss of cabin pressure, perform emergency descent. On the ground – Troubleshoot system and perform maintenance as required.
DOOR SUPPLY HIGH (SPZ-8400 equipped Airplanes having Advance Warning System for the GIV Door Seal System.)	Output pressure from door seal regulator is greater than 26 psig.	In flight – Check engine power setting. Decrease thrust setting to extinguish message. If message does not extinguish, monitor cabin altitude. Monitor EICAS for possible **DOOR SEAL PRES LOW** annunciation. On the ground – Troubleshoot system and perform maintenance as required.

Caution (Amber) Messages and Annunciations, ctd… AFM 3A

Message:	Cause(s):	Corrective Action:
DOOR SUPPLY LOW (SPZ-8400 equipped Airplanes having Advance Warning System for the GIV Door Seal System.)	Output pressure from door seal regulator is less than 12 +/- 1.5 psig.	In flight – Check engine power setting. Increase thrust setting to extinguish message. If message does not extinguish, monitor cabin altitude. Monitor EICAS for possible **DOOR SEAL PRES LOW** annunciation. On the ground – Troubleshoot system and perform maintenance as required.
DRSL H (SWLP indication for SPZ-8000 equipped Airplanes having Advance Warning System for the GIV Door Seal System.)	Output pressure from door seal regulator is greater than 26 psig.	In flight – Check engine power setting. Decrease thrust setting to extinguish message. If message does not extinguish, monitor cabin altitude. Monitor indication lights for possible **DRSL L** annunciation. If **DRSL L** annunciates, follow Corrective Action for **DRSL L** indication as defined below. On the ground – Troubleshoot system and perform maintenance as required.
DRSL L (SWLP indication for SPZ-8000 equipped Airplanes having Advance Warning System for the GIV Door Seal System.)	Output pressure from door seal regulator is less than 12 +/- 1.5 psig and/or main entrance door seal or baggage door seal pressure is less than 2.5 +/- 0.5 psig relative to cabin pressure.	In flight – Check engine power setting. Increase thrust setting to extinguish message. If message does not extinguish, monitor cabin altitude. Check door seals for possible leaks. If leaks detected, descend to safe altitude. If loss of cabin pressure, perform emergency descent. On the ground – Troubleshoot system and perform maintenance as required.

Caution (Amber) Messages and Annunciations, ctd… AFM 3A

Message:	Cause(s):	Corrective Action:
DU FAN 1-2 FAIL	Respective Display Unit (DU) cooling fan has failed.	1. Fan No. 1 cools DU 1, 3 and 5. 2. Fan No. 2 cools DU 2, 4 and 6. 3. If Fan No. 1, consider switching pilot's side to PFD XFER. 4. If Fan No. 2, consider switching copilot's side to PFD XFER.
EL MISTRIM NOSE UP/DN	Autopilot elevator trim out of trim in direction indicated.	1. No action required for momentary message. 2. If steady message disengage autopilot, retrim, attempt to determine problem.
ENG FIRE LOOP ALERT	Engine fire detection loop fault detector active.	1. Check fire detection fault panel. 2. Identify engine and loop. 3. Disable faulty loop with fault switch.
EPMP BATT SW OFF	Battery No. 1 and/or No. 2 switch (MASTER) is OFF.	1. Depress proper switch. 2. No message indicates that both battery switches are on.

Message:	Cause(s):	Corrective Action:
EPMP POWER FAIL	Either 1 or all 4 sources of input power supply to EPMP has failed. **NOTE:** If – in addition to this message – all EPMP indications are lost, it is possible that the overhead panel dimming rheostat (OVHD PNL knob) is in a position between fully OFF (which reverts the EPMP to full bright mode) and the beginning of the brightness controlling feature. Rotation of the OVHD PNL knob may remedy this anomaly.	1. Check CBs: • EPMP SW PWR # 1: PO, A-5 • EPMP SW PWR # 2: PO, B-5 • EPMP # 1 DC: PO, C-9 • EPMP # 2 DC: PO, D-9 2. If only 1 power supply has failed, continue operation as normal, and if appropriate, attempt to reset CB. 3. If all power sources have failed (indicated by black-out of EPMP), land as soon as practical.

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Message:	Cause(s):	Corrective Action:
FGC 1-2 FAIL	Respective FGC system has failed.	None required. Switchover to good flight guidance system is automatic. Cycle appropriate CB if FGC is hard-failed: (FGC #1: CPO, A-7; FGC #2: CPO, B-7)
FLAP ASYMMETRY (1) (2)	Flap position asymmetry detected. Flaps have stopped moving toward selected position.	1. Select longest available runway for landing. 2. L/R Airstart Ignition - ON. 3. VREF for configuration from Performance section. 4. GPWS/GND SPOILER FLAP ORIDE - ON. **CAUTION:** DO NOT EXCEED TIRE SPEED LIMITATIONS.
(1) SPZ 8400 equipped airplanes with ASC 69A or ASC 69B (Flap Asymmetry Indicator) installation. **(2)** SPZ 8000 equipped airplanes with ASC 69A or ASC 69B, an amber FLAP ASYM indicator light, installed under the FLAP/STAB position indicator, will illuminate. The CAS message is not incorporated.		
FLT HYD FAIL	Failure of Flight Hydraulic System pressure.	1. Check Flight Hydraulic pressure and quantity. 2. For loss of Flight Hydraulic pressure and / or fluid, see **Flight Hydraulic System Failure – Loss of Pressure and / or Fluid**, page EF-11.
FUEL LEVEL LOW, L-R	Fuel level in hopper is below approximately 650 lb (295 kg).	1. Ensure boost pumps are ON. 2. Check fuel quantity gauge. 3. OPEN cross-flow valve. 4. If fuel quantity is greater than 650 lb in appropriate tank: • In flight, level airplane attitude • On ground, turn boost pumps on to fill hopper

Message:	Cause(s):	Corrective Action:
FUEL TEMP HOT, L-R	Fuel temperature above 90°C or below 0°C.	1. Retard power and monitor temperature indication. 2. If indication does not return to normal, place power lever in idle position. **OR:** 1. Verify oil temperature is within operating level at engine start. 2. Allow engine to operate at idle until operating temperature is reached. 3. Message will extinguish when engine fuel temperature is above 0°C.
FWD RADIO RACK HOT	Radome, left or right equipment bay temperature has exceeded 200°F (93°C).	1. Attempt to isolate hot equipment and shut down. 2. Turn off unnecessary equipment.
HYD QTY LOW	Either Combined and/or Flight Hydraulic System quantity is low.	1. Select HYDRAULICS synoptic and verify which quantity is low. If a leak is evident, expect system to fail. 2. For loss of Combined Hydraulic fluid, see **Combined Hydraulic System Failure – Loss of Pressure and Fluid**, page EF-8. 3. For loss of Flight Hydraulic fluid, see **Flight Hydraulic System Failure – Loss of Pressure and / or Fluid**, page EF-11. 4. For loss of both systems, see **Dual Hydraulic System Failure**, page EF-4.
ICE DETECTED (If Installed)	Ice detected by probe.	Select cowl and/or wing anti-ice on, as appropriate or depart icing condition.

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Message:	Cause(s):	Corrective Action:
IRS 1-2 ALN FAULT	Improper PRESENT POSITION entry or excess airplane motion while in align mode.	1. Check PRESENT POSITION. 2. If incorrect, re-enter. 3. If correct or if excess motion is suspected, turn IRS off for 3 seconds then back to ALIGN and re-enter PRESENT POSITION.
IRS 1-2-3 COOL FAIL (IRS 3 is SPZ 8400 only)	Respective IRS cooling fan has failed.	Shut down IRS.
IRS 1-2 ON BATTERY	Respective IRS has lost normal power source and has reverted to battery power.	1. Check normal bus power source to IRS and restore, if able. 2. Expect limited IRS endurance.
MACH TRIM LIMIT	Elevator trim has reached electrical trim limit while operating airplane in Mach Trim speed region (greater than 0.80 Mach).	Retrim or slow airplane.
MACH TRIM OFF	Pitch trim switch OFF or electric trim system has failed (message inhibited at less than 0.82 Mach).	1. Check pitch trim switch engaged (light out). 2. If switch engaged, check STAB AUG SERVO circuit breakers (CPO: A-6, B-6.) 3. Observe mach trim inop speed. 4. See **GIV AFM Section 1-22-10**: **Mach Trim Compensation / Electric Elevator Trim**.
MAIN FUEL FAIL, L-R	Main boost pump has failed.	1. Check position of MAIN PUMP CONT circuit breaker on POP. 2. Select alternate boost pump. 3. Turn failed pump OFF and pull appropriate CB in PDB. 4. See **Fuel Boost Pump Failure**, page EF-17.

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Message:	Cause(s):	Corrective Action:
PAX OXYGEN OFF (SN 1290 & subs)	Passenger oxygen bottle is shut OFF at the bottle.	1. Verify bottle is OPEN at the bottle. 2. If bottle is OPEN, notify maintenance prior to dispatch.
PITOT HT FAIL, L-R	Pitot tube heater elements not energized.	1. Check PITOT HEAT switch ON and circuit breaker(s) – IN (L PITOT HT CONT: CP, L-12; L PITOT HT PWR: CP, L-11; R PITOT HT CONT: CP, M-12; R PITOT HT PWR: CP, M-11.) 2. If PITOT HEAT illuminates, expect erroneous indications of ASI, Air Data System Computer, Airspeed Warning Sensor, and Mach Trim Compensation. 3. Depart icing conditions.
RETRIM L-R WING DOWN	Lateral axis out of trim.	1. Grasp control yoke firmly. 2. Disconnect autopilot and retrim airplane in direction indicated.
SNGL RUDDER LIMIT	Failure of input pressure load limiter (with flight and combined system pressure normal).	Avoid abnormal rudder deflection.
SPD BRAKE EXTENDED	Speed brakes (flight spoilers) are deployed with throttles above idle.	Retract speed brakes or reduce thrust as desired.
SSEC DISABLED	Static source error correction to DADC has been disabled.	Check the appropriate radio rack DADC test switches.
STAB-FLAP FAIL	Flaps UP (0°) and stabilizer not UP.	1. Lower flaps to correspond with stabilizer position to prevent running out of longitudinal trim. 2. Maintain airspeed within flap position limits. 3. See **Failure of Stabilizer / Flap Interconnect**, page EE-7.

Message:	Cause(s):	Corrective Action:
STALL BARRIER 1-2	Stall barrier system giving stall angle indication.	1. If either valve light is illuminated, check airplane attitude, power, and airspeed. 2. If primary instruments indicate normal conditions, disable system by pulling the STALL WARN CMPTR circuit breaker (STALL WARN CMPTR #1: CPO, A-11; STALL WARN CMPTR #2: CPO, B-11.) 3. Full protection is provided by operative system.
STALL BARR 1-2 FL	Stall barrier failed. It is normal for STALL BARRIER 1 FL to appear any time EMERGENCY FLAPS are used and flap position is greater than 22°.	1. Check STALL BARRIER and STALL BARR VALVE circuit breakers (STALL BARR VALVE #1: CPO, B-12; STALL BARR VALVE #2: CPO, B-9) 2. Pull appropriate faulty barrier breakers. 3. Stall barrier protection is still available with one system operative.
STALL BARRIER OFF	Stall barrier switch OFF or system not powered.	1. Check stall barrier switch ON ("OFF" light out). 2. If on, check STALL BARRIER and STALL BARR VALVE circuit breakers (STALL BARR VALVE #1: CPO, A-12; STALL BARR VALVE #2: CPO, B-12; STALL BARRIER #1: CPO, A-9; STALL BARRIER #2: CPO, B-9.)
STBY PITOT HT FAIL	Standby pitot heater elements not energized.	Check STBY PITOT HEAT switch and circuit breaker (STBY PITOT HT CONT: CP L-13; STBY PITOT HT PWR: CP M-13.)

Message:	Cause(s):	Corrective Action:
STEER BY WIRE FAIL	Both steering channels have failed: steering not available. System is in shimmy damp mode. With ASC 176 installed, a switch position / system status miscompare is detected.	1. Check circuit breakers (STEER BY WIRE #1: CPO, C-12; STEER BY WIRE #2: CPO, D-12.) 2. Cycle steering ON/OFF switch. 3. If message does not clear, use rudder, brakes, and/or differential power for steering. 4. If message occurs on ground with no hydraulic power available, turn power switch OFF until engines are running. 5. Reselect power switch ON. If message occurs in flight: see **Nose Wheel Steering Failure**, page EG-8.
TAT PROBE HT FAIL	TAT probe heater has failed.	1. TAT inputs to DADC's may be inaccurate. 2. DADC outputs and FMS readouts may be inaccurate. 3. Check circuit breaker (TOTAL TEMP PROBE HTR: CP, L-10.)
TRIM LIMIT	Autopilot elevator trim has reached electric trim limits.	Cycle PITCH TRIM switch to DISENGAGE position and manually trim, as required.
TRU FAIL	Transformer rectifier has no output.	1. Check that L or R MAIN AC bus is powered. 2. Check that the MAIN DC Bus EPMP TRU/EXT switchlight is illuminated. 3. If not, TRU/EXT switch - PUSH. 4. Check both TRU circuit breakers on Power Distribution Box. 5. If still no power, reduce load to below 250 Amps and return Main DC Bus Switch to AUTO.

Message:	Cause(s):	Corrective Action:
TRU HOT	Transformer rectifier temperature. above 374°F (190°C).	Reduce load on TRU. If warning continues after 2 minutes: 1. Select other available DC power source(s). 2. Pull TRU (R AC) circuit breaker.
UNDER FLOOR O'HEAT (SN 1280-1327 having ASC 415B and ASC 395; SN 1328 and subs.)	Bleed air leak detected under cabin floor.	1. If wing anti-ice is on, select left wing OFF. 2. If message persists, select right wing off. 3. Wait 2 minutes. 4. If message persists, depart icing conditions. 5. If message extinguishes, re-establish wing anti-ice using the anti-ice switch which did not cause the message to extinguish. 6. If in doubt, depart icing conditions. 7. Verify ISOLATION valve closed. 8. Select left bleed OFF. 9. If message persists: • Select left bleed ON and right bleed OFF • Check floor board physically for temperature 10. If cool, no action. 11. If hot, descend to 15,000 ft. or below and select left bleed off and RAM AIR on. ***NOTE:*** If the condition requires that a SINGLE (L or R) ENG BLEED be selected OFF, descend to 41,000 ft. or below. If above 41,000 ft. and ENG BLEED is selected OFF, make slow deliberate power lever movements on the affected engine.

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Message:	Cause(s):	Corrective Action:
UTILITY HYD OFF	Utility hydraulic pump has been selected off.	Turn utility hydraulic pump to ON/ARM if desired.
WING HOT, L-R	Wing anti-icing exhaust duct temperature above 180°F (82°C).	1. Turn applicable wing anti-icing switch to OFF. Wait two (2) minutes. 2. If message remains ON, assure isolation valve is closed, then select applicable side BLEED AIR switch to OFF. 3. If message remains ON, indication is false and flight may be continued with normal use of wing anti-icing. Reselect applicable BLEED AIR switch ON. 4. If message goes out in Step 2, leave applicable BLEED AIR switch OFF, select applicable ECS pack OFF, and re-check isolation valve closed. Descend to 41,000 ft. Monitor cabin altitude; descend as required. ***NOTE:*** With Bleed Air switch OFF and Isolation valve CLOSED, there is no cowl anti-icing available to that engine. 5. Monitor wings for icing. Depart icing conditions as soon as possible.
WING TEMP LOW, L-R	Wing anti-icing exhaust duct temperature below 100°F (38°C). Will not illuminate for two (2) minutes after switch ON (time delay).	1. Increase thrust if flight conditions permit. 2. If message does not go out, monitor wings for icing and depart icing conditions as soon as possible.

Caution (Amber) Messages and Annunciations, ctd… AFM 3A

Message:	Cause(s):	Corrective Action:
YAW DAMPER OFF	Yaw damper switch OFF or yaw damper failure.	1. Check yaw damper switch ON (light out). 2. If switch on, check STAB AUG SERVO circuit breakers (STAB AUG SERVO #1: CPO, A-6; STAB AUG SERVO #2: CPO, B-6.) 3. Observe yaw damper inoperative speed. See **Yaw Damper Failure**, page EE-12.

Annunciation:	Cause(s):
MASTER CAUTION reset switch "C" legend (amber) illuminated on Pilot's / Copilot's Master Warning and Caution Lights Panel. "Double Chime" aural tone sounds.	A new CAUTION (amber) message is displayed on CAS. The new message will be displayed flashing on the top of the CAUTION messages stack.
"Lo-Lo-Lo" aural tone sounds.	Autothrottle disconnected.
"Lo-Hi-Lo" aural tone sounds.	Autopilot manually disconnected.
AC RESET light (amber) illuminated on EPMP.	AC Bus fault indicated. A fault on the L or R MAIN AC bus will result in that bus being disconnected from all power sources. No power source light will be illuminated. A fault on the ESS AC bus will result in the AC BPCU cycling bus power from LEFT to RIGHT to E-INV. The amber E-INV "ON" switch legend will also be illuminated. See **Bus Fault - AC or DC RESET Light on**, page EA-14.
DC RESET light (amber) illuminated on EPMP.	DC Bus fault indicated. A fault on the L or R MAIN DC bus will result in that bus being disconnected from all power sources. No power source light will be illuminated. A fault on the ESS DC bus will result in the DC BPCU cycling bus power from LEFT to RIGHT to BATT. The amber BATT "ON" switch legend will also be illuminated. See **Bus Fault - AC or DC RESET Light on**, page EA-14.
BATT 1 or BATT 2 CHGR FAIL light (amber) illuminated on EPMP.	Battery or battery charger has failed, Left Main AC bus or Right Main AC bus has failed, or input power circuit breaker is open.
L ALT FAILED BRG light (amber) illuminated on overhead panel.	Left alternator main bearing has failed and alternator is operating on auxiliary bearing.

Annunciation:	Cause(s):
APU ALT FAILED BRG light (amber) illuminated on overhead panel.	APU alternator main bearing has failed and alternator is operating on auxiliary bearing.
R ALT FAILED BRG light (amber) illuminated on overhead panel.	Right alternator main bearing has failed and alternator is operating on auxiliary bearing.
L/R ENG IDLE light (amber) illuminated on windshield center post.	Engine idle is in low range when it should be scheduled to high range. OR: Engine idle is in high range when it should be scheduled to low range. See **Approach Idle System Failure**, page EC-17.
Amber chevron illuminated on pilot's/copilot's AOA indexer.	AOA for approach and landing is too low.
AP OFF light (amber) illuminated on Pilot's / Copilot's Master Warning and Caution Lights Panel.	Autopilot disconnected.
AT OFF light (amber) illuminated on Pilot's / Copilot's Master Warning and Caution Lights Panel.	Autothrottle disconnected.
LOW FUEL light(s) (amber) illuminated on standby fuel quantity indicator.	Fuel level in respective hopper is below approximately 650 lb (295 kg).
APU LOAD light (amber) illuminated above DU 2 or 5. (SPZ-8400 equipped)	APU electrical load for operations above 30,000 ft. not within limits.
ELWS CONFIG light (amber) illuminated above DU 2 or 5. (SPZ-8400 equipped)	APU electrical power improperly configured for operations above 30,000 ft.
ELWS FAIL light (amber) illuminated above DU 2 or 5. (SPZ-8400 equipped)	APU electrical power unreliable for operations above 30,000 ft.
N COOL VALVE OPEN light (amber) illuminated above DU 2 or 5.	Nose compartment cooling valve is open.
HORN SILENCE light (amber) illuminated on Landing Gear Control Panel.	Airplane is below 1200 ft. AGL (radio altitude), all three landing gear not down and locked, flaps less than 22°, and power lever is retarded below 70%.

Annunciation:	Cause(s):
Amber light illuminated above differential pressure indicator.	Cabin differential pressure has reached 9.6 psi.
Amber light illuminated above APU EGT indicator.	APU is at 100% speed and EGT has exceeded 688°.
Amber light illuminated above APU RPM indicator.	APU RPM has exceeded 104%.
Amber FIRE EXT DISCHD legend illuminated on APU FIRE EXT switch.	APU fire extinguisher has been discharged.

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Advisory (Blue) Messages and Annunciations AFM 3B

Message:	Cause(s):	Corrective Action:
AC EXT POWER DC EXT POWER	External power is connected to airplane.	Remove external power before taxiing.
AP CTLR SW STUCK	Autopilot guidance panel switch stuck in, preventing other selections.	Try to pry stuck switch loose.
AP ENGAGE INHIBIT	An attempt is made to engage autopilot under any of following conditions: • Autopilot disconnect button active • GA switch active • Airplane on GND and airspeed less than 50 KCAS • Stick shaker is active • TCS switch active • Trim up / down switch active	Correct inhibiting situation and attempt re-engagement.
APU ALT OFF	APU alternator is operating but AUX POWER switch is not ON.	Select AUX POWER switch ON.

Message:	Cause(s):	Corrective Action:
APU EXCEEDANCE	Fault warning computer (FWC) has recorded an exceedance.	**SPZ 8000-equipped airplanes having ASC 415B**: message may be caused by APU fire. Take appropriate action and, if necessary, see **APU Fire** procedure on ED-5. Recording may be viewed by selecting EXCEEDANCES on the SYSTEMS menu of the Display Controller. **SPZ 8000 having ASC 415B and SPZ 8400**: message may be caused by APU RPM or EGT exceedance. Verify APU auto shut down and notify maintenance. Recording may be viewed by selecting EXCEEDANCES on the SYSTEMS menu of the Display Controller.
NOTE: For airplanes S/N 1000 and sub. with ASC 465, a nuisance “APU EXCEEDANCE” message may occur on second APU start and then on every other start, unless power is removed/interrupted from the fault warning computer between starts. The “APU EXCEEDANCE” message should be considered a nuisance message if cockpit overhead APU panel and/or APU synoptic page indicate EGT and RPM parameters are within normal limits.		
AT ENGAGE INHIBIT	Attempt is made to engage auto-throttle under any of following conditions: • A/T discon-nect button active • A/T not armed on flight guidance control panel • Both engines not running • EPR below 1.17 • Isolation valve open	Correct inhibiting situation and attempt re-engagement.

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Message:	Cause(s):	Corrective Action:
AT 1-2 FAIL	Indicated autothrottle has failed, autothrottle will disconnect.	1. Check appropriate circuit breakers (A/T SERVO #1: CPO, C-9; A/T SERVO #2: CPO, D-9.) 2. Select other A/T computer and re-engage.
AT NOT IN HOLD	Airplane speed has exceeded 60 KCAS with autothrottle engaged on takeoff and autothrottle servos are not in hold.	Disengage autothrottle and manually adjust throttles to takeoff EPR.
BATT WARM Message active only if optional Battery Temperature Indicator system is installed. May be caution or advisory message depending on message module programming.	L (or R) battery temp at or above 120° F.	1. Monitor battery temperature and select OFF if temperature reaches 140° F. 2. Log for maintenance action.
BC 1-2-3 TEST FAIL	BUS controller power-up self test has failed.	1. Verify power was applied to BC's and FWCs in normal power-up sequence. 2. Full system capabilities are maintained on a single BUS controller.

NOTE: This message is only enabled on ground. BC test will fail if power is momentarily removed from both FWCs after BC's are powered. If this condition occurs, fail message can be cleared by reapplying airplane power in normal power-up sequence or by pulling and resetting all 3 BUS CONTROLLER circuit breakers (BUS CONT #1: CP, K-2; BUS CONT #2: CP, L-2; BUS CONT #3: CP, M-2.)

Message:	Cause(s):	Corrective Action:
BRAKE MAINT REQ'D (Brake-By-Wire: SN 1000 - 1213)	If message illuminates following gear retraction and extinguishes 5 seconds later, the auto spin-down feature has failed.	See **Brakes / Anti-Skid (Brake-By-Wire) Index**, page EB-1, for appropriate anti-skid off braking procedure.
BRAKE MAINT REQ'D (HMAB: SN 1214 AND SUBS)	If message illuminates during takeoff or landing ground roll or airborne with gear extended, a wheel speed sensor miscompare lasting more than 5 seconds has been detected.	1. Notify maintenance to check for wheel speed sensor faults or possible dragging brake(s). 2. If message illuminates momentarily with gear down while airborne, no action required.
BUS CTLR 1-2-3 FL	Indicated bus controller has failed.	1. Check circuit breakers. 2. Full system capabilities are maintained on a single bus controller. 3. Cycle CB on failed bus controller.
CALL	Toggled by SELCAL, CABIN/LAV call, Galley /Interphone or telephone.	Answer appropriate caller.
CDU 1-2 FAIL	FMS CDU failed.	Verify failure and if failed, use remaining FMS for navigation.
CHECKLIST MISMATCH	Different check-list installed in FWC 1 and FWC 2.	Do not use checklist until correct checklists are installed.

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Message:	Cause(s):	Corrective Action:
CMB HYD HOT	Hydraulic system fluid temperature above 220°F (104°C).	Proceed with flight and investigate after landing.
CONT IGN, L-R (SPZ 8400 equipped)	Continuous ignition is ON.	1. Select OFF if not required. 2. Observe duty cycle limitations in GIV AFM Section 1, Limitations (also presented in QRH section EC).
COWL A/I ON, L-R	Cowl anti-ice on.	Turn OFF after exiting icing conditions.
CPL DATA INVALID	Lateral or vertical mode cannot be selected or canceled automatically due to invalid source and / or invalid required sensors. Message also appears anytime selected course changes by greater than 3° when in LNAV / VOR, except when over station.	Check validity of coupled source. Reset appropriate lateral and/or vertical mode.
DADC 1-2 FAIL	A DADC has failed.	1. Verify failure and, if failed, select opposite DADC. 2. Verify DADC selection for pressurization.

Message:	Cause(s):	Corrective Action:
DADC MISCOMPARE	Priority FGC has detected an unflagged miscompare between DADC 1 and DADC 2.	1. Identify faulty DADC by reference to PFD, ND, standby flight instruments, guidance panel, pressure control and transponder panel. 2. Select good DADC to those panels. 3. Isolate faulty DADC with CB: (DADC #1: CP, F-3; DADC #2: CP, G-3.) 4. Check message clear. 5. Re-engage yaw damper and autopilot if desired. See **DADC Failures**, page EA-36.
DAU 1A-1B-2A-2B FL	DAU channel has failed.	Select alternate DAU channel.
DAU 1-2 MISCMP-MSG	EICAS blue message miscompare between DAU 'A' and 'B' channel.	Compare blue messages displayed with DAU 'A' and 'B' channels. Select good channel.
DC CONFIG MISMATCH (SPZ 8400 equipped)	Disagreement between the 2 display controllers' configuration.	Resolve configuration mismatch prior to takeoff. Cannot be resolved weight-off wheels.
DISP CTLR 1-2 FAIL	A display controller has failed.	No action. Use remaining display controller where applicable.
DU 1-2-3-4-5-6 HOT	DU hot (266°F [130°C]).	1. Select DU OFF. 2. If message clears, select DU ON. 3. If message returns, select DU OFF and leave off for remainder of flight.

Message:	Cause(s):	Corrective Action:
E BATT 1-2-3*-4* DISCH (* if installed)	Emergency battery is discharging.	1. Ensure E BATT is not on. 2. If battery is not on, pull and reset circuit breaker to attempt to clear message (AFT EMER BATT: P, I-13; FWD EMER BATT: P, H-13.) 3. If message does not clear, no further action is required. 4. Breaker should be left closed and system rearmed as required.
E BATT 1-2-3*-4* FAIL (* if installed)	Self explanatory.	Turn off emergency battery.
ENGINE COWL OPEN	Engine cowl door is open.	Close door.
ENGINE EXCEEDANCE (Deleted by ASC 415 [SPZ 8000 airplanes]) **OR:** **EXCEEDANCE RECORD** (SPZ 8400 equipped)	Fault warning computer has recorded an exceedance.	1. Check engine instruments. 2. Reduce thrust by appropriate engine(s) within limits. 3. May be caused by engine fire. 4. Take appropriate action. 5. Recording may be viewed by selecting EXCEEDANCES on SYSTEMS menu of display controller.
EPR 1 - DADC 2 **EPR 2 - DADC 1**	DADC malfunction has caused remaining DADC to supply information to both EPR systems.	Verify status of DADC’s.
EXT BATT SWITCH ON	External battery switch on.	Turn external battery switch OFF.

Message:	Cause(s):	Corrective Action:
FGC 1-2 MASTER	A shift in controlling FGC has occurred: indicated FGC has taken over. Message times out automatically.	1. Check SENSOR page. 2. Shift back to other FGC, if desired, or leave as is.
FGC NOT USING IRS 1-2	IRS data has been rejected by FGC due to unflagged miscompare between IRS 1/2 or flagged IRS failure.	1. Check IRS condition / status on FMS IRS status page. 2. System performance is same with 1 or 2 IRS sources.
FGC SYSTEM TEST	Maintenance switch is on.	Turn off maintenance switch located in each avionics rack.
FLT HYD HOT	Hydraulic system fluid temperature above 220° F (104° C).	1. If flight system is hot and utility pressure is required, utility hydraulic pump switch must be set to ON. 2. If utility system is not required, turn utility pump OFF.
FLIGHT REC FAIL	Flight recorder has failed. It is normal for this message to be illuminated until an engine is started and 10 psi oil pressure is attained.	1. Check circuit breakers (CP, C-7, C-8, C-9.) 2. Pull and reset if necessary. 3. Check FDR Ground Maintenance Override Switch in right hand avionics bay to be in AUTO. 4. Check for FDAU and / or DFDR fail annunciators and record for maintenance.
FUEL INT TANK OPEN	Fuel intertank valve is open.	Select fuel intertank OFF.
FUEL XFLOW OPEN	Fuel crossflow is open.	Select fuel crossflow OFF.

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Message:	Cause(s):	Corrective Action:
FWC 1-2 FAIL	Fault warning computer has failed.	Select other FWC.
FWD EXT SW PNL OPN	Forward external switch panel door is open.	Close door.
FWD LAV SVC DR OPN	Forward lavatory service door is open.	Close door.
GND SPOILER UNARM	Ground spoilers not armed.	Check switch; cycle to ARMED.
GPWS FAIL	Ground Proximity Warning System (GPWS) has failed.	1. Check GPWS circuit breaker: EGPWS AC: CP, D-10 EGPWS DC: CP, E-10 2. Verify at least one radio altimeter is available.
IRS 1-2 FAIL	Indicated IRS has failed.	Verify failure on MSU panel and, if being used, select another sensor.
IRS 1-2 HI LAT ALN	IRS is in alignment status and senses a latitude above 70°.	1. Use IRS position with caution, accuracy may be degraded. 2. IRSs should be left in ALIGN mode for 15 minutes prior to selecting NAV mode.
IRS MISCOMPARE	FGC has detected an unflagged miscompare fault between IRS 1/2.	1. If there is no IRS MONITOR FAIL message, FGC will automatically note either IRS 1 or IRS 2 and AP / YD will remain engaged. 2. If there is IRS MONITOR FAIL message present, the AP / YD will automatically disconnect. 3. Re-engagement is possible only after miscompare condition is corrected.

Advisory (Blue) Messages and Annunciations, ctd… AFM 3B

Message:	Cause(s):	Corrective Action:
IRS MONITOR FAIL	FGC has detected failure of comparison monitor located in AHRS / IRS 3.	1. AHRS / IRS 3 must be in NAV mode when YD is engaged for monitor test to pass. 2. If message is present and unflagged IRS miscompare occurs, AP / YD will disconnect. 3. To eliminate message, switch from current FGC to opposite FGC and back, e.g., FGC 1 to FGC 2 to FGC 1.
IRS 1-2 NAV READY	Indicated IRS has completed alignment but MSU panel selector is still in ALIGN.	Select NAV on MSU panel selector.
IRS 1-2 ON DC	Airplane AC power supply has failed.	1. Check appropriate airplane AC power supply. 2. IRS will continue to operate normally.
ISOLATION VLV OPEN	Isolation valve is open.	Select isolation valve CLOSED.
MAINT SWITCH ON	Maintenance switch is on.	Select maintenance switch off (located in each avionics rack).
NAV MISCOMP L-R SEL	FGC has sensed difference in navigation receiver information and selected a single receiver as NAV source.	None. Switchover is automatic. ***NOTE:*** Message is active only in ILS dual coupled mode.

Advisory (Blue) Messages and Annunciations, ctd… AFM 3B

Message:	Cause(s):	Corrective Action:
NZ 1-2 FAIL	Indicated navigation computer has failed.	1. Check appropriate CB (CP: D-8, E-8.) 2. Associated FMS CDU will be blank or display PERF INDEX.
OIL FILT BPASS, L-R	Engine oil filter has clogged.	1. Monitor engine oil pressure. 2. If pressure falls below limits, see **Engine Failure / Shut-down In Flight**, page EC-7.
PERF 1-2 FAIL	Indicated performance computer has failed.	1. Check appropriate CB (CPO: C-11, D-11.) 2. Performance information and autothrottle computer will not be available.
PROG MSG 1-2 FAIL (SPZ 8400 equipped)	Programmable message modules have failed.	Notify maintenance for corrective action.
PROG MSG 1-2 MISMATCH (SPZ 8400 equipped)	Programmable message modules do not contain same messages.	Notify maintenance for corrective action.
RAD ALT 1-2 FAIL	Radar altimeter has failed.	Select opposite radar altimeter.
RECENTER TURN KNOB	TURN knob is not centered. Autopilot cannot be engaged.	Re-center TURN knob.
RUDDER LIMIT	Rudder actuator torque limiter is in operation.	None.
RUDDER STRG OFF	With ASC 302A installed HAND WHEEL ONLY is selected.	None required if this is desired mode. If not, select NORMAL mode.

Advisory (Blue) Messages and Annunciations, ctd… AFM 3B

Message:	Cause(s):	Corrective Action:
SELECT INHIBIT	An attempt is made to manually select invalid FGC.	Determine cause of FGC fault.
SERVICE DOORS	One or more of service doors is open.	Close service doors.
SG 1-2-3 FAIL	Indicated symbol generator has failed.	Switch appropriate symbol generator to "ALT" and momentarily select a different mode on the navigation display.
SG 1-2-3 HOT	Symbol generator hot.	1. Check avionics rack ventilation. 2. Select alternate symbol generator and pull hot SG CB: (SYM GEN #1: CP, K-3; SYM GEN #2, CP, L-3; SYM GEN #3, CP, M-3.)
SPD BRAKE EXTNDED	Speed brakes are extended.	Retract speed brakes.
SPD BRAKE SWITCH	FWC and FGC disagree on position of speed brakes.	Check adjustment of speed brake extended signal to DAU and FGC at next maintenance opportunity.
T&L >80% FULL (Added by ASC 415 for SPZ 8000 airplanes.)	FWC memory is greater than 80% full.	Download and erase FWC memory at next convenient maintenance period.
TCAS FAIL	Traffic Alert and Collision Avoidance System (TCAS) has failed.	1. Check TCAS circuit breaker (TCAS: CP, D-11.) 2. Verify transponder and altitude reporting is selected ON.
TERRAIN NOT AVAIL	Terrain awareness is not available.	1. Check circuit breakers: EGPWS AC: CP, D-10 EGPWS DC: CP, E-10 2. Verify at least one (1) radio altimeter is available.

Message:	Cause(s):	Corrective Action:
TONE GEN FAIL OR: TONE GEN 1-2 FAIL (SPZ 8400 equipped)	Aural warning tone generator has failed.	1. Check circuit breakers. 2. Reset if required. 3. Proceed with flight. 4. No aural tones will be available.
UNDER FLOOR O'HEAT (SN 1280-1327 having ASC 415B and ASC 395; SN 1328 and subs.)	Bleed air leak detected under cabin floor.	1. If wing anti-ice is on, select left wing OFF. 2. If message persists, select right wing off. 3. Wait 2 minutes. 4. If message persists, depart icing conditions. 5. If message extinguishes, re-establish wing anti-ice using the anti-ice switch which did not cause the message to extinguish. 6. If in doubt, depart icing conditions. 7. Verify ISOLATION valve closed. 8. Select left bleed OFF. 9. If message persists: • Select left bleed ON and right bleed OFF • Check floor board physically for temperature 10. If cool, no action. 11. If hot, descend to 15,000 ft. or below and select left bleed off and RAM AIR on. ***NOTE:*** If the condition requires that a SINGLE (L or R) ENG BLEED be selected OFF, descend to 41,000 ft. or below. If above 41,000 ft. and ENG BLEED is selected OFF, make slow deliberate power lever movements on the affected engine.

VHF COMM 1-2-3 FL	Self explanatory.	Check status of VHF radio.
VNAV TRACK CHANGE	One minute prior to vertical navigation track change.	No action.
VOICE REC FAIL	Self explanatory.	No action.
VOR COURSE	Autopilot has sensed being over station while coupled to LNAV (VOR/TCN).	If desired, course selector may now be changed more than 3° without dropping LNAV (VOR/TCN) mode.
WS FAIL	Windshear function of GPWS has failed.	1. Check circuit breakers: EGPWS AC: CP, D-10 EGPWS DC: CP, E-10 2. Verify at least one (1) radio altimeter is available.
WS UNAVAILABLE	Windshear function of GPWS not available.	1. Check circuit breakers: EGPWS AC: CP, D-10 EGPWS DC: CP, E-10 2. Verify at least one (1) radio altimeter is available.
WING A / I, L-R	Wing anti-ice On.	Turn OFF wing anti-ice after departing icing conditions.

Advisory (Blue) Messages and Annunciations, ctd… OM 04-04-20

Annunciation:	Cause(s):
"Single Chime" aural tone sounds.	A new ADVISORY (blue) message is displayed on CAS. The new message will be displayed flashing on the top of the ADVISORY messages stack. The aural tone will then automatically cease and message will automatically revert to steady display.
"Cricket" aural tone sounds.	Airplane Overspeed
"Beep" aural tone sounds.	Altitude Alert
LEFT/RIGHT WING WARM light (blue) illuminated on overhead panel.	Wing anti-ice plenum in wing leading edges has reached minimum operating temperature of 100° F (38° C).
EXT BATT SW light (blue) illuminated on overhead panel.	External battery switch on.
AC EXT PWR light (blue) illuminated on overhead panel.	AC external power applied.
DC EXT PWR light (blue) illuminated on overhead panel.	DC external power applied.
LEFT/RIGHT FRONT/SIDE WINDOW light (green) illuminated on overhead panel.	Windshield heat operating.
REV ARM light (green) illuminated above Display Unit (DU) 2 or 5.	Parameters satisfied for thrust reverser deployment.
LH RR FAN FAIL light (blue) illuminated on copilot's side panel. **(1)**	Left hand radio rack cooling fan has failed.
RH RR FAN FAIL light (blue) illuminated on copilot's side panel. **(1)**	Right hand radio rack cooling fan has failed.
RH RR FAN AUTO light (blue) illuminated on copilot's side panel. **(1)**	Right hand radio rack cooling fan operating automatically.
RH RR FAN MAN ON light (blue) illuminated on copilot's side panel. **(1)**	Right hand radio rack cooling fan operating manually.
SPEED BRAKE handle illuminated (pale blue).	SPEED BRAKE handle not in RETRACT detent.

(1) SN 1156 and subs.

Abnormal / Emergency Procedures Master Index

Engines Index EC-1

Flight Controls / Autoflight Index, ctd…

General Guidance

Should any emergency occur, the following shall apply:

1. Maintain control of the airplane.
2. Other than retracting the landing gear and silencing aural warnings, take no action until above 400 ft. AGL.
3. Analyze the situation and take appropriate action. Resetting “popped” circuit breakers is not recommended unless the affected system is required for continued safe flight and landing.
4. Land as soon as conditions permit.

Circuit breaker location is identified using the following acronyms:

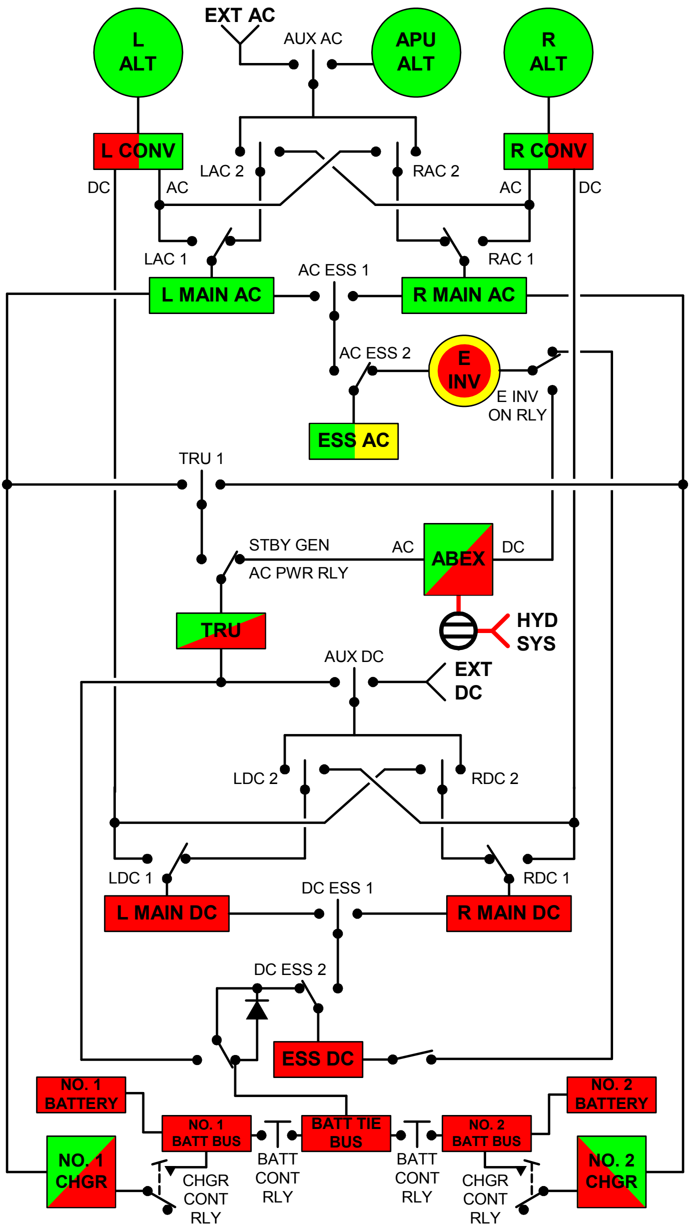
- P - Pilot's Circuit Breaker Panel (Behind Seat)
- CP - Copilot's Circuit Breaker Panel (Behind Seat)
- PO - Pilot's Overhead Circuit Breaker Panel
- CPO - Copilot's Overhead Circuit Breaker Panel

Both Abnormal and Emergency Procedures are combined in this chapter and are presented by system or event. To differentiate between the type of procedure, **Emergency Procedure** titles have a **red** border; **Abnormal Procedure** titles have an **amber** border. When possible, Emergency Procedures will be presented before Abnormal Procedures within each section.

Avionics / Electrics / APU Index

Related Topics In QRH

Electrical Power System Diagram



Alternator / Converter Failure - Dual

AFM 4-07-10

After verifying that neither Alternator / Converter can be regained by use of "Alternator / Converter Failure - Single" checklist proceed as follows:

1. Crossflow .... OPEN
2. Fuel Boost Pump (One Main only) .... ON (ALL OTHERS - OFF)
3. L or R FUEL PRESS LOW Messages .... CHECK / OUT

If combined hydraulic pressure and the Standby Electrical Power system are available, proceed as follows. If not, proceed to Step 12.

NOTE: Approximately twenty (20) minutes of electrical power is available if both batteries are fully charged and Standby Electrical Power System cannot be used.

4. AC / DC RESET Switches .... PUSH

If no Help:

5. All Normal Electrical Power Sources (except batteries)........... OFF
6. Standby Electrical Power Switch .... ON
7. Standby Electrical E-INVERT Switch .... ON
8. Standby Electrical TRU Switch .... ON

   CAUTION: UNLOAD ELECTRICAL SYSTEM TO STAY AT OR UNDER 100% AC AND DC POWER AS INDICATED ON STANDBY ELECTRICAL POWER PANEL. TURN OFF DC ITEMS IF AC PERCENTAGE IS OVERRANGE, AND VICE VERSA.

   NOTE: Speed Brakes may be used, however, operation should be slow (approximately five [5] seconds for full range movement).

9. Utility Pump .... OFF / AS REQUIRED

   NOTE: The Utility Pump, if left in the ARM position, will run continuously.

If both FGCs indicate FAILED, to regain FGC 1:

10. FGC 1 and 2 Circuit Breakers (CPO: A-7, B-7)...................... PULL
11. FGC 1 Circuit Breaker Only (CPO: A-7)............................. RESET

Continued on next page →

Alternator / Converter Failure – Dual, ctd… AFM 4-07-10

NOTE: The Standby Electrical Power system is powered by a hydraulically driven motor and is therefore sensitive to hydraulic pressure changes. As long as the limitations in GIV AFM Section 1 are observed, the Standby Electrical Power system should operate normally. If the system drops off line, as result of hydraulic pressure transients, it will be necessary to cycle Standby Electrical Power switch from ON to OFF and back to ON.

NOTE: The Standby Electrical monitor panel indicates percent power from the source. The airplane subsystem takes standby AC power and converts it to DC through the TRU. Standby DC power is converted through the "E" inverter to AC power. Thus, airplane DC load is displayed on standby AC load monitor and airplane AC load is displayed on the standby DC load monitor. When operating on the standby system, electrical load (both AC and DC) should be reduced to less than 100% on the standby monitor panel to avoid excessive use of battery power.

All essential AC and DC Bus-powered equipment is available when using Standby Electrical Power System. Among the items available:

Pilot's PFD	Standby Engine Instruments
DU 3 (SG 2 and 3 - ALT)	Standby Warning Panel
COMM No. 1 (or No. 3, as bused)	Standby Fuel Qty Indicator
NAV No. 1 and DME No. 1	Wing / Cowl Anti-ice
ADF No. 1	Pressurization
ATC No. 1 (Transponder)	Cockpit / Cabin Temp Control *(SN 1120 & subs. and airplanes with ASC 170)*
Display Controller No. 1	Main Fuel Boost Pumps
FMS No. 1 and IRS No. 1	Cross Flow Valve
Both DBDIs	Intertank Valve
Both Clocks	Tone Generator
ISDU (or 3rd Nav Unit)	Pilot's and Standby Pitot Heat
DADC No. 1	Air Start Ignition
FGC-1 (Turn Knob Inop)	Fire Detection / Protection
Flight Director	Both FWCs (FWC 1 only: SPZ 8000 airplanes)
Pitch Trim	AOA No. 1
Yaw Damper	Aux Hydraulic Pump
All Bus Controllers	Flaps and Flap / Stab Indicator
Left Windshield Wiper	

Upon descent for approach and landing, replace Standby Electrical Power with APU/Auxiliary Power, when altitude permits, as follows:

NOTE: Normal hydraulic landing gear operation and landing with the standby electrical power system as a source of electrical power is approved as long as the auto ground spoilers and thrust reversers are **NOT** used. See **Landing With Standby Electrical Power System Operating**, page EF-12.

Continued on next page →

Alternator / Converter Failure – Dual, ctd… AFM 4-07-10

12. Descend to 15,000 ft. or lower; slow to a maximum speed of 250 KCAS.

    NOTE: To ensure sufficient battery strength, it is recommended that descent to 15,000 ft. and start of the APU be accomplished within ten (10) minutes, if the Standby Electrical Power system cannot be used during the descent.

13. APU Fire Warning .... CHECK
14. APU Master ....ON
15. APU Oil Press Light ....ON
16. APU Start Button .... PUSH

    CAUTION: A MAXIMUM OF TWO (2) THIRTY (30) SECOND APU START ATTEMPTS WILL ENSURE TWENTY (20) MINUTES OF BATTERY-ONLY OPERATION. ADDITIONAL START ATTEMPTS WILL REDUCE BATTERY-ONLY OPERATING TIME. IF UNABLE TO START APU AND STANDBY ELECTRICAL POWER SYSTEM IS NOT AVAILABLE, **SEE ELECTRICAL SYSTEM - BATTERY ONLY OPERATION, PAGE EA-7.**

    CAUTION: IF APU CANNOT BE STARTED OR APU ALTERNATOR CANNOT BE USED TO POWER THE BUSES, REMAIN ON STANDBY ELECTRICAL POWER THROUGHOUT DESCENT AND APPROACH. DO NOT CONTINUE CHECKLIST. AT CREW'S DISCRETION, THE LANDING MAY BE ACCOMPLISHED BY TURNING OFF STANDBY ELECTRICAL POWER AND USING BATTERY POWER ONLY FOR LANDING OR THE CREW MAY ELECT TO LAND WITH STANDBY ELECTRICAL POWER OPERATING.

    NOTE: For airplanes having ASC 465 (36-150[G] APU), it is acceptable for the APU EGT synoptic indication to go into the amber or red range during start. The synoptic indication only reflects running limitations.

17. Auxiliary Power ....ON
18. Essential AC Bus AUTO Switch .... PUSH
19. Standby Electrical Power E-INVERT Switch ....OFF
20. Essential DC Bus AUTO Switch... PUSH
21. Standby Electrical Power TRU Switch ....OFF
22. EPMP Auxiliary AC and DC Percent Loads .... CHECK
23. Fuel Boost Pumps (Both MAINS)..ON
24. Crossflow .... CLOSED

Continued on next page →

Alternator / Converter Failure – Dual, ctd… AFM 4-07-10

25. Standby Electrical Power Switch.. OFF

    NOTE: If the 100% load limit is exceeded on the APU alternator (AUX PWR on the EPMP) or on the transformer-rectifier (AUX PWR on EPMP), turn off equipment as required to bring loads within limits. See the appropriate APU procedure in this section.

26. Utility Pump .... ARM / AS REQUIRED

END

Essential DC Bus Power Failure AFM 4-07-20

NOTE: Steps 1 thru 4 cause DU 2 to be unpowered, DU 6 to Red X and the copilots PFD to automatically transfer to DU 5 (SPZ 8400 only). Selecting NORM-ALT-ALT on the SG reversionary panel will restore the copilot's displays to normal. DU 2 will remain unpowered for remainder of flight.

1. Essential DC Bus Power Source .... BATT
2. L / R MAIN DC SENSE CBs (P: H-14, I-14) .... PULL
3. Standby Electrical Power Switch .... ON
4. Standby Electrical Power TRU Switch .... ON
5. Battery Ammeters.. .... MONITOR FOR INDICATION AND LOAD-SHED IF REQUIRED

For Approach and Landing:

NOTE: If standby electrical power is interrupted during the following steps, cycle Standby Electrical Power switch OFF then ON.

6. Gear Handle .... DOWN
7. Flaps..SET FOR LANDING
8. Emergency Batteries .... ON
9. Ground Spoilers .... OFF
10. HP RPM ....MAINTAIN 67% HP RPM UNTIL TOUCHDOWN

    NOTE: Once the airplane is on the ground, there is no need to continue to maintain 67% HP RPM. The standby electrical system will stay on line during normal taxi maneuvers. If standby electrical power is interrupted, cycle the Standby Electrical Power Switch OFF then ON to regain power.

Continued on next page →

Essential DC Bus Power Failure, ctd… AFM 4-07-20

11. Reverse Thrust ....DO NOT USE

On touchdown:

12. Flight Spoilers ....MANUALLY DEPLOY AT A SLOW RATE (APPROXIMATELY 5 SECONDS)
13. Normal Braking ....USE TO STOP AIRPLANE

END

Electrical System - Battery Only Operation AFM 4-07-30

CAUTION: WHEN ANY ELECTRICAL CONDITION REQUIRES OPERATION ON BATTERIES ONLY, LAND AT NEAREST SUITABLE AIRPORT.

1. Essential DC Bus Battery Switch ....ON
2. Battery 1 and 2 Switches..ON
3. Crossflow ....OPEN
4. Fuel Boost Pumps (One Main Only)...... ON (ALL OTHERS - OFF)
5. **L or R FUEL PRES LOW** Message..........................CHECK / OUT

   CAUTION: IMMEDIATE DESCENT TO APU START ENVELOPE (15,000 FT / 250 KCAS) SHOULD BE INITIATED. ATTEMPT MAXIMUM OF TWO (2) THIRTY (30) SECOND APU START ATTEMPTS. IF APU START IS UNSUCCESSFUL, MAINTAIN 15,000 FT MSL OR BELOW (MSA PERMITTING) AND TURN OFF LAST FUEL BOOST PUMP.

6. Left Power, Right Power and Auxiliary Power..........................OFF
7. All Non-Essential Items ....OFF

   NOTE: Two (2) DUs will be powered with batteries only. Consideration should be given to turning one or both OFF if the situation permits.

8. Utility Pump ....OFF/AS REQUIRED

   NOTE: The utility pump, if left in the ARM position, will run continuously when only battery essential power is available to airplane.

END

Alternator / Converter Failure - Single

AFM 3-07-40

1. Appropriate Converter AC and DC Loads/Voltage ....CHECK
2. Electric Master LEFT or RIGHT Power.. .... OFF, WAIT TEN (10) SECONDS THEN ON
   If voltage is produced, automatic transfer back to this source will occur.

If voltage is not produced or reading is unusual, or if converter trips off again:

3. Electric Master LEFT or RIGHT Power.. ....OFF FOR REMAINDER OF FLIGHT

If below 15,000 ft., it is recommended that the APU be started as source of supplemental electrical power. See **APU Inflight Operation – Alternate Electrical Source**, page EA-27.

Failure of a portion of a converter may be indicated by one or more failure messages as follows:

- **L AC POWER FAIL**
- **L DC POWER FAIL**
- **R AC POWER FAIL**
- **R DC POWER FAIL**

If any one of these failure messages illuminate, proceed as follows:

1. Appropriate Converter AC and DC Loads/Voltage ....CHECK
2. Electric Master LEFT or RIGHT Power.. .... OFF, WAIT TEN (10) SECONDS THEN ON
   If voltage is produced, automatic transfer back to this source will occur.
   If DC voltage is not produced and L-R DC POWER FAIL message remains, converter operation may be continued. If AC voltage is not produced and **L-R AC POWER FAIL** message remains, turn converter OFF.

END

Electrical Load Warning System - ELWS

AFM 3-07-50

In the event APU electrical load is observed in low amber range, proceed as follows:

1. CABIN MASTER...ON

If condition persists:

2. GALLEY MASTER...ON

In the event APU electrical load is observed in high amber range, proceed as follows:

1. GALLEY MASTER...OFF

If condition persists:

2. CABIN MASTER...OFF

END

Flight With One Electrical System Inoperative

AFM 3-07-60

APU Alternator Failure or APU Flameout:

1. Essential AC and DC buses will automatically transfer to operative converter.
2. Main AC and DC buses powered by APU will be unpowered ..... at time of failure due to configuration of EPMP bus switches.
3. Power to failed buses may be regained by selecting AUTO on EPMP panel for those buses.
4. Remaining converter will be capable of powering airplane for remainder of flight.
5. If APU has flamed out, the pilot may elect to descend to 15,000 ft., restart APU, return to cruise altitude, and monitor APU electrical load.
6. Allow time during descent for windshield heat to defog windows.

Alternator / Converter Failure:

NOTE: GIV airplane SNs 1000 through 1155 without APU Cooling / Venting Enhancements (ASC 390A, ASC 427 and ASC 470) and 36-150[G] APU (ASC 465A) is limited to 30,000 ft.

1. Essential AC and DC buses will automatically transfer to APU alternator and TRU.
2. Main AC and DC buses powered by Converter will be unpowered at time of failure due to configuration of EPMP bus switches.
3. DO NOT attempt to repower failed buses by switching their power source to APU unless airplane altitude is 35,000 ft. or less. APU alternator is not capable of powering entire airplane above 35,000 ft.
4. On descent for approach and landing, power to failed buses may be regained by Selecting AUTO on EPMP panel for those buses. Accomplish this at or below 35,000 ft.
5. Allow time during descent for windshield heat to defog windows.

END

Operational Procedures With Converter / Alternator Inoperative - ELWS Installed

OM 09-03-60

THIS PROCEDURE IS TO BE USED IN ACCORDANCE WITH GIV MMEL "M" AND "O" PROCEDURES.

For departure operations with one (1) converter / alternator inoperative, complete the following steps:

After Starting Engines:

1. START MASTER .... OFF

If LEFT converter / alternator is inoperative, complete Steps 2 through 7, omit Steps 8 through 13 and proceed to Step 14. If RIGHT converter / alternator is inoperative, proceed to Step 8.

If LEFT converter / alternator is inoperative:

2. ELECTRICAL MASTER RIGHT PWR .... ON
3. ELECTRICAL MASTER AUX PWR .... ON
4. LEFT MAIN AC APU / EXT .... ON (MANUALLY SELECT)
5. R MAIN AC RIGHT .... ON (MANUALLY SELECT)
6. L MAIN DC TRU / EXT .... ON (MANUALLY SELECT)
7. R MAIN DC RIGHT .... ON (MANUALLY SELECT)

If RIGHT converter / alternator is inoperative:

8. ELECTRIC MASTER LEFT PWR .... ON
9. ELECTRIC MASTER AUX PWR .... ON
10. LEFT MAIN AC LEFT .... ON (MANUALLY SELECT)
11. R MAIN AC APU / EXT .... ON (MANUALLY SELECT)
12. L MAIN DC LEFT .... ON (MANUALLY SELECT)
13. R MAIN DC TRU / EXT .... ON (MANUALLY SELECT)

For EITHER converter / alternator inoperative, proceed as follows:

14. ESS AC AUTO .... ON
15. ESS DC AUTO .... ON

Continued on next page →

Operational Procedures With Converter / Alternator Inoperative – ELWS Installed, ctd… OM 09-03-60

16. APU Bleed Air .... AS REQUIRED
17. Battery Ammeters..CHECK
18. Emergency Power .... ARM
19. Doors .... CLOSE
20. Anti Ice Heaters .... ON
21. Cowl / Wing Anti-Ice ....CHECK / AS REQUIRED
22 CABIN PRESSURE CONTROL..............................FLIGHT / SET
23. Fuel Boost Pumps / Crossflow Valve ....ON / CLOSE
24. Nose Wheel Steering .... OFF
25. Flight Controls ....CHECK
26. Ground Spoilers ....CHECK
27. Stall Barrier.. TEST
28. Yaw Damper.. ON
29. ELWS Loadmeter ....ON / CHECK LOAD IN GREEN BAND
30. Windshield Heat .... OFF TWO (2) SECONDS, THEN ON

    NOTE: ELWS FAIL light will illuminate momentarily while windshield heat is being cycled.
31. Nose Wheel Steering .... ON
32. AUX Pump.. ARMED
33. Brake Test Switch (BITE).......................PRESS, THEN RELEASE

After Landing:

1. Ignition .... OFF
2. Transponder .... STANDBY
3. Flaps..AS DESIRED
4. ANTI ICE / Anti Ice Heaters .... OFF

    NOTE: ELWS CONFIG light will illuminate when windshield heat is selected OFF.

Continued on next page →

Operational Procedures With Converter / Alternator Inoperative - ELWS Installed, ctd… **OM 09-03-60**

5. Fuel Boost Pumps .... OFF (ONE EACH SIDE)

   NOTE: The amber (or red) APU LOAD light may illuminate when fuel boost pumps are selected OFF. This is normal.

6. Landing Lights .... OFF
7. Ground Spoilers .... OFF
8. BTMS / OVHT Light .... CHECK / OUT

   For airplanes with Brake Temperature Monitoring System (BTMS) installed.

   NOTE: If landing required hard braking, monitor temperatures to ensure brake temperatures have peaked and are decreasing.

9. Radar .... STANDBY

Shutdown:

1. Parking Brake .... ON
2. Emergency Power .... OFF
3. Radar .... OFF
4. ELWS Loadmeter .... OFF
5. EPMP Bus Switches (6) .... AUTO
6. ELECTRIC MASTER LEFT (or RIGHT) PWR .... OFF
7. HP Fuel Cocks .... SHUT
8. TGT .... MONITOR
9. Radios .... OFF
10. BTMS .... CHECK / LIGHT OUT

    For airplanes with Brake Temperature Monitoring System (BTMS) installed.

11. IRSs .... OFF
12. Exterior Lights .... AS REQUIRED
13. Fuel Boost Pumps .... OFF
14. Cockpit Lights .... AS DESIRED
15. Oxygen .... OFF

Continued on next page →

16. Display Units .... OFF
17. ELECTRIC MASTER AUX PWR... OFF
18. APU .... OVERSPEED / TEST
19. Standby Attitude Indicator .... CAGED
20. APU MASTER Switch .... OFF (APU RPM LESS THAN 10%)

    NOTE: (For airplanes having ASC 465 (36-150[G] APU)): the amber **APU MASTER WARN** CAS message will not be displayed if the APU MASTER switch is inadvertently left ON after shutdown.

21. BATT 1 / BATT 2 Switches .... OFF
22. Gust Lock .... ON

    NOTE: Ensure hydraulic pressure is depleted prior to engaging gust lock.

23. Chocks .... IN PLACE
24. Parking Brake.. OFF

END

Bus Fault - AC or DC RESET Light On AFM 3-07-70

When RESET switchlight is pushed, one of three events will occur:

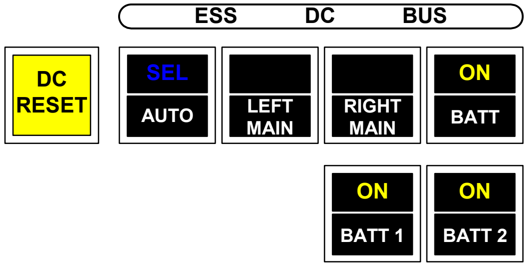
- RESET light will extinguish and remain out.
- RESET light will extinguish, the relevant BPCU will cycle the bus through its possible power sources, then the RESET light will re-illuminate.
- RESET light will not extinguish but, instead, remains illuminated.

Specific procedures for Essential DC Bus Fault, Essential AC Bus Fault, Main AC Bus fault and Main DC Bus Fault follow in blue.

NOTE: The MASTER and RESET Switches should not be cycled more than once every ten (10) seconds.

Continued on next page →

Essential DC Bus Fault Indicated:



1. DC RESET Switchlight .... PUSH

   If RESET light extinguishes and remains out:

   A. Essential DC Bus AUTO Switchlight .... CHECK ON

   B. Verify electrical power is on L MAIN DC bus (source light illuminated) and Essential DC L MAIN switchlight is ON.

   C. Voltage........................... MONITOR REMAINDER OF FLIGHT

2. **If RESET light extinguishes momentarily while the bus cycles through possible power sources, then re-illuminates:**

   A. Essential DC Bus BATT Switch....................................... PUSH

   B. ESSENTIAL DC BUS FEEDER Circuit Breakers (On PDB)...... .... PULL (ONE AT A TIME)

   C. DC RESET Switchlight .... PUSH (ONCE, FOR EACH CIRCUIT BREAKER PULLED)

   CAUTION: PULL ONLY ONE (1) CIRCUIT BREAKER AT A TIME AND, IF PROBLEM CONTINUES, RESET CB BEFORE PULLING THE NEXT CIRCUIT BREAKER.

   D. After fault isolation, leave applicable feeder breaker pulled (OPEN).

   E. Essential DC Bus AUTO Switchlight .... CHECK ON

3. **If RESET light remains illuminated:**

   A. Essential DC Bus Battery Switchlight............................... PUSH

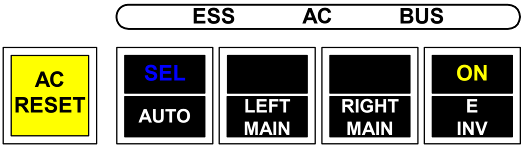
   B. Battery Amperage...CHECK

   If the Main DC buses are powered, turn off both Main Boost Pumps. If the Main DC busses are not powered, open Crossflow and turn off Right Main Boost Pump.

   If battery amperage exceeds negative three (-3) amps discharge, consideration should be given to descending below 15,000 ft. and turning off all boost pumps to conserve battery life.

Continued on next page →

Essential AC Bus Fault Indicated:



1. AC RESET Switchlight .... PUSH

   If RESET light extinguishes and remains out:

   A. Essential AC Bus AUTO Switchlight .... CHECK ON

   B. Verify electrical power is on L MAIN AC BUS (source light illuminated) and that Essential AC L MAIN switchlight is ON.

   C. Monitor voltage and frequency for remainder of flight.

2. **If RESET light extinguishes momentarily while the bus cycles through possible power sources, then re-illuminates:**

   A. Essential AC Bus AUTO Switchlight .... CHECK ON

   B. Check Essential AC bus voltage and frequency:

      1) If indications are normal:

         a. PILOT/COPILOT PHASE B and C CBs ("AC ESS" Section on PDB) .... PULL

         b. AC RESET Switchlight .... PUSH

         c. RESET PILOT/COPILOT PHASE B and C CBs one at a time. Allow sufficient time for fault to reoccur. AC RESET switchlight will illuminate.

         d. After fault isolation, leave applicable circuit breaker pulled (OPEN).

         e. AC RESET Switchlight .... PUSH

      2) If indications are abnormal (voltage and frequency drop):

         a. Essential AC Bus E INV Switch .... PUSH

         b. PILOT/COPILOT PHASE A and ACCESS CBs (“AC ESS” Section on PDB) .... PULL

Continued on next page →

Essential AC Bus Fault Indicated, ctd…

c. Manual Pressurization .... SELECT

CAUTION: PULLING PILOT'S PHASE A CIRCUIT BREAKER CAUSES LOSS OF AUTOMATIC PRESSURIZATION CONTROL; ONLY MANUAL PRESSURIZATION WILL BE AVAILABLE.

d. AC RESET Switchlight .... PUSH

e. Reset PILOT/COPILOT PHASE A and ACCESS CBs one at time. Allow sufficient time for fault to reoccur.

f. After fault isolation, leave applicable circuit breaker pulled (OPEN).

g. Essential AC Bus AUTO Switchlight.................. PUSH

NOTE: If Pilot's Phase A is not the fault, reset pressurization to AUTO.

3. **If RESET light remains on:**

A. Power.................. VERIFY AVAILABLE ON LEFT MAIN AC BUS

B. Essential AC Bus L Main Switchlight................................ PUSH

C. AC RESET Switchlight .... PUSH
If AC RESET switchlight extinguishes, monitor voltage and frequency for remainder of flight.

If AC RESET switchlight does NOT extinguish:

D. Power............. VERIFY AVAILABLE ON RIGHT MAIN AC BUS

E. Essential AC Bus R Main Switchlight .... PUSH

F. AC RESET Switchlight .... PUSH
If AC RESET switchlight extinguishes, monitor voltage and frequency for remainder of flight.

If AC RESET switchlight does NOT extinguish, continue:

G. Essential AC Bus E INV Switch .... PUSH

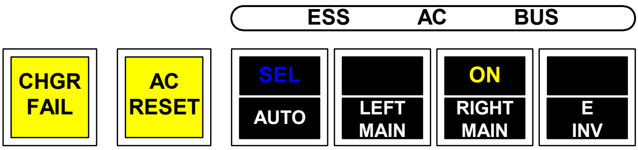
H. Monitor voltage and frequency for remainder of flight.

***NOTE*:** All B and C Phase Essential AC Bus power is not available.

Continued on next page →

Bus Fault - AC or DC RESET Light On, ctd… AFM 3-07-70

Main AC Bus Fault Indicated:



NOTE: With a MAIN AC BUS unpowered, the corresponding CHGR FAIL warning light will illuminate.

If RIGHT MAIN AC BUS is unpowered:

1. Essential AC BUS .... AUTO

If LEFT MAIN AC BUS is unpowered:

1. Essential AC BUS RIGHT MAIN Switchlight........................ PUSH
2. AC RESET Light.. PUSH
3. **If RESET light extinguishes and power is restored to the bus:**
   A. If fault indication was the LEFT BUS, then:
   Essential AC Bus AUTO Switchlight .... PUSH

   B. Monitor loads for remainder of flight.
4. **If RESET light extinguishes momentarily, while bus cycles through available sources, then re-illuminates:**
   A. Relevant AC Main Feeder Circuit Breakers (PDB) ....PULL

   B. AC RESET Switchlight ....PUSH

   C. RESET Main Feeder circuit breakers one at a time. Allow sufficient time for fault to recur.

   D. After fault isolation, then:
   Applicable Circuit Breaker.................. LEAVE PULLED (OPEN)

   E. AC RESET Switchlight ....PUSH

   F. If fault was the LEFT BUS, then:
   Essential AC Bus AUTO Switchlight ....PUSH
5. **If RESET light remains ON:**
   A. Verify availability of power for failed bus by selecting Volt/Freq. Meter to LEFT, RIGHT, and, if APU is running, AUX.

Continued on next page →

Bus Fault - AC or DC RESET Light On, ctd… AFM 3-07-70

Main AC Bus Fault Indicated, ctd…

B. If failed bus is LEFT AC BUS, then:
As Available, LEFT MAIN, RIGHT MAIN, or AUX .... PUSH

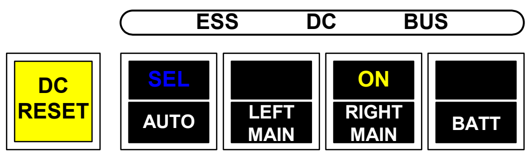
C. If failed bus is RIGHT AC BUS, then:
As Available, RIGHT MAIN, LEFT MAIN, or AUX .... PUSH

D. AC RESET Switchlight .... PUSH

E. If RESET Switchlight extinguishes, then:
Loads .... MONITOR FOR REMAINDER OF FLIGHT

F. If RESET Switchlight remains ON, then:
Loss Of Equipment Powered By Dead Bus..................... NOTE

Main DC Bus Fault Indicated:



If RIGHT MAIN DC BUS is unpowered:

1. Essential DC BUS .... AUTO

If LEFT MAIN DC BUS is unpowered:

1. Essential DC BUS RIGHT Switchlight.................................. PUSH
2. DC RESET Light .... PUSH
3. **If RESET light extinguishes and power is restored to the bus:**

   A. If fault indication was LEFT BUS, then:
   Essential DC Bus AUTO Switchlight ....PUSH

   B. Monitor loads for remainder of flight.

Continued on next page →

Bus Fault - AC or DC RESET Light On, ctd… AFM 3-07-70

Main DC Bus Fault Indicated, ctd…

4. **If RESET Light extinguishes momentarily, while the bus cycles through available sources, then re-illuminates:**

   A. Relevant DC Main Feeder Circuit Breakers (PDB)............PULL

   B. DC RESET Switchlight..PUSH

   C. RESET Main Feeder circuit breakers one at a time. Allow sufficient time for fault to recur.

   D. After fault isolation, then:
   Applicable Circuit Breaker.................. LEAVE PULLED (OPEN)

   E. DC RESET Switchlight..PUSH

   F. If fault indication was LEFT BUS, then:
   Essential DC Bus AUTO Switchlight.................................PUSH

5. **If RESET Light remains ON:**

   A. Verify availability of power for faulty bus by selecting Volt/Freq. Meter to LEFT, RIGHT; and, if APU is running, AUX.

   B. If faulty bus is LEFT DC BUS, then:
   As available, LEFT MAIN, TRU, or RIGHT MAIN ....PUSH

   C. If faulty bus is RIGHT DC BUS, then:
   As available, RIGHT MAIN, TRU, or LEFT MAIN ....PUSH

   D. DC RESET Switchlight..PUSH

   E. If RESET Switchlight extinguishes, then:
   Loads...................... MONITOR FOR REMAINDER OF FLIGHT

   F. If RESET Switchlight remains ON, then:
   Loss Of Equipment Powered By Dead Bus ....NOTE

END

Battery Or Battery Charger Failure AFM 3-07-80

CHGR FAIL warning light illuminated:

1. Appropriate Main AC Bus Power.. CHECK
2. Affected Battery Current/Voltage...................................OBSERVE

If meter reading is abnormal:

3. BATT CHGR CB (PDB).. PULL
   CHRG FAIL warning light will remain ON.
4. After 3 - 5 minutes, BATT CHGR CB (PDB) .... RESET

If battery does not charge:

5. BATT CHGR CB (PDB).. PULL
6. Battery Switch On Affected Side ....OFF
   NOTE: OFF only if battery is discharging. Re-instate if battery power is required.

END

Essential DC Bus On Battery Power AFM 3-07-90

NOTE: If the ESS DC BUS AUTO, LEFT MAIN, and BATT switch capsules are illuminated without the BATT 1 and 2 switches illuminated or the "BATT ON BUS" message (SPZ 8400)/capsule (SPZ 8000) illuminated, the K20/K22 relay experienced a failure of one of the two relay-poles. Report for maintenance action.

If DC Reset Light is ON, see Bus Fault - AC Or DC RESET Light On, page EA-14. If DC Reset Light is NOT ON:

1. Left and/or Right Main DC Bus...................... VERIFY POWERED
   A. If buses are not powered, determine reason and re-power the buses.
   B. If buses are powered, verify ESS DC Bus switch selection on EPMP is AUTO.
   C. DC Reset Switch ....PRESS
   D. Hard select ESS DC to Left, then Right, then back to AUTO. Pause between each step to determine if power to ESS DC BUS is switched from BATT to either Left or Right Main Bus.
2. If EPMP switch selection is correct, check Battery Ammeters for discharge.

Continued on next page →

If Battery Ammeters indicate that batteries are discharging:

A. Load shed as necessary (one or both main boost pumps may be sufficient).

CAUTION: DO NOT ATTEMPT TO START THE APU OR USE THE AUX HYDRAULIC PUMP.

OR:

B. Power Source For ESS DC Bus .... SELECT BATT

C. L / R MAIN DC SENSE CBs (P: H-14, I-14) ....PULL

D. Standby Electrical Power Switch .... ON

E. Standby Electrical Power TRU Switch............................... ON

F. Monitor Battery Ammeters. Load shed if required.

NOTE: Steps 2B thru 2F cause DU 2 to be unpowered, DU 6 to RED X and copilot's PFD to auto-transfer to DU 5 (SPZ 8400 only). Selecting NORM-ALT-ALT on SG reversionary panel will restore the co-pilot's displays to normal. DU 2 will remain unpowered.

G. Maintain minimum of 67% HP RPM while in this configuration.

H. For Approach and Landing:

NOTE: The crew may elect to land with "batteries only" powering the essential bus provided there is power to the main buses from the converters. Load shedding of the MAIN boost pumps and opening the cross flow valve prior to landing should be sufficient to preserve batteries.

1) Gear Handle ....DOWN
2) Flaps .... SET FOR LANDING
3) Emergency Batteries ....ON
4) Ground Spoilers...OFF
5) Maintain 67% HP RPM until touchdown.

   NOTE: Once the airplane is on the ground, there is no need to continue to maintain 67% HP RPM. The Standby Electrical System will stay on line during normal taxi maneuvers. If Standby Electrical Power is interrupted, cycle the Standby Electrical Power Switch OFF then ON to regain power.

6) DO NOT use Reverse Thrust.
7) On touchdown, manually deploy the flight spoilers at a slow rate (approximately 5 seconds).
8) Use normal braking to stop airplane.

END

Master Table Of Electrical Component Availability GAC

COMPONENT	AC BUSSES L MN AC BUS	AC BUSSES R MN AC BUS	AC BUSSES ESS AC BUS	DC BUSSES L MN DC BUS	DC BUSSES R MN DC BUS	DC BUSSES ESS DC BUS	DC BUSSES BATT BUS #1, #2
ADF					#2 NO 1000-1017. OK 1018 & SUB.	#1 NO 1000-1017. OK 1018 & SUB.	
AHRS	OK IF L MAIN DC OK			OK IF L MAIN AC OK			
AIR START IGNITION						NO	
AOA HEAT					#2 NO	#1 NO	
AOA STALL BARRIER					#2 NO	#1 NO	
APU ENG						NO START	NO START
AUX HYD PUMP						NO	NO
BATT CHGRS	#1 NO	#2 NO				NO	
BOOST PUMPS					NO ALTNS	NO MAINS	
CDU					#2 NO	#1 NO	
COWL-WING ANTI-ICE						NO	
CPT/CABIN TEMP CONT					*FULL COLD	NO	
DADC					#2 NO	#1 NO	
DAU				#1B NO	#2A NO	#1A NO, #2B NO	
DDRMI 1 (DBDI)						#1, #2 OK IF E-BATTS ON	

*SNs 1120 and Subsequent or ASC 170 - CPT/CAB TEMP CONT is normal.

Continued on next page →

Master Table Of Electrical Component Availability, ctd… GAC

COMPONENT	AC BUSSES			DC BUSSES			
	L MN AC BUS	R MN AC BUS	ESS AC BUS	L MN DC BUS	R MN DC BUS	ESS DC BUS	BATT BUS #1, #2
DISP. CONT.					#2 NO	#1 NO	
DME					#2 NO	#1 NO	
DU				#5 NO	#2, #4, #6 NO	#1, #3 NO	
E INVERTER						OK IF SEPS IS ON	
ECS PACKS						UNABLE TO CLOSE	
ENG IDLE				LEFT = 67% MIN	RIGHT = 67% MIN		
ENGINE INSTRU-MENTS			NO EPR			STBY OK IF E-BATTS ON	
FGC SPZ 8000					#2 NO	#1 NO	
FGC SPZ 8400						#1 & #2 NO	
FIRE DET PROT						NO	
FLAPS						NO	
FLIGHT GUIDANCE PANEL				OK IF R MAIN DC OK	OK IF L MAIN DC OK		
FWC					#2 NO	#1 NO	
GROUND SPOILERS				NO		NO	
HF	#1 NO	#2 NO					
IRU				#1 OK IF L MAIN AC OK	#2 OK IF R MAIN AC OK		
ISOLATION VALVE			FROZEN			FROZEN	
LDG GEAR						IND OK IF E-BATTS ON	
NAV COMP					#2 NO	#1 NO	
NAV RCVR					#2 NO	#1 NO	

Continued on next page →

Master Table Of Electrical Component Availability, ctd… GAC

COMPONENT	AC BUSSES			DC BUSSES			
	L MN AC BUS	R MN AC BUS	ESS AC BUS	L MN DC BUS	R MN DC BUS	ESS DC BUS	BATT BUS #1, #2
NOSE STEER					OK IF ESS DC OK	OK IF R MAIN DC OK	
PERF COMP				#1 NO	#2 NO		
PITCH/MACH TRIM					#2 NO	#1 NO	
PITOT HEAT		NO RIGHT	NO LEFT NO STBY		NO RIGHT	NO LEFT NO STBY	
PRESSUR-IZATION			NO AUTO			ZERO OFF	
RAD ALT				#1 NO	#2 NO		
REVERSERS						NO	
SYM GEN				#3 NO	#2 NO	#1 NO	
TOE BRAKES						OK IF E-BATTS ON	
TONE GEN						NO	
TRANS-PONDER TDR/CAD					#2 NO	#1 OK IF E-BATTS ON	
VHF					#2 NO	#1 OK IF E-BATTS ON	
WIPERS				NO RIGHT		NO LEFT	
WX RADAR				PILOTS RDR CONT NO	CO-PILOTS RDR CONT NO		
X FLOW / INTERTANK						FROZEN	
YAW DAMPER					#2 NO	#1 NO	

END

Components Powered By The Emergency Batteries

OM 2A-24-30

Battery Function	No. 1 Battery	No. 2 Battery
Emergency Buses	Inboard Anti-skid (HMAB)	Outboard Anti-skid (HMAB)
	No. 1 Clock	No. 2 Clock
	No. 1 Standby DDRMI / DBDI	No. 2 Standby DDRMI / DBDI
	No. 1 COMM	Standby Horizon
	No. 1 COMM Cont.	Left Fuel Qty. Ind.
	No. 1 Audio	Right Fuel Qty. Ind.
	No. 1 TDR / CAD	Left Stby. Eng. Inst.
	Stby. Mach/AS Ind.	Right Stby. Eng. Inst.
	Stby. Altimeter	Cockpit Lights Cont.
	Stby. Elec. Pwr. Pnl.	Landing Gr. Pos. Lts.
	BCS Channel 1	Flap / Horiz. Stab. Position Indicator
	Exterior Emergency Lights (8 ea.)	Exterior Emergency Lights (8 ea.)
Memory Keep Alive	No. 1 COMM	No. 2 COMM
	No. 1 TDR / CAD	No. 1 TDR / CAD
	No. 1 NAV	No. 2 NAV
	No. 1 DME	No. 2 DME
	No. 1 ADF	No. 2 ADF

NOTE FOR SN 1467 AND SUBS

Emergency Batteries No. 3 and No. 4 are added. The No. 3 Battery powers the interior emergency lighting. The No. 4 Battery powers the main entrance door emergency lighting (if main entrance door is open).

END

APU Inflight Operation - Alternate Electrical Source

AFM 3-04-20

For SN 1000 thru 1155 without APU Loadmeter (includes airplanes having ASC 465 (36-150[G] APU)).

In the event supplemental electrical power is required in flight due to failure of an engine or alternator / converter system, the APU alternator may be used as a source.

To start APU in flight:

1. Altitude/Airspeed ....15,000 FT OR BELOW / 250 KCAS OR LESS
2. Battery 1 and 2 Switches ....ON
3. APU Fire Warning ....CHECK
4. APU Master Switch ....ON
5. APU Start Button .... PUSH

   CAUTION: APU STARTER IS LIMITED TO THREE (3) CONSECUTIVE START ATTEMPTS THIRTY (30) SECONDS ON, FOLLOWED BY TWENTY (20) MINUTE COOL-DOWN PERIOD. THEN, THREE (3) ADDITIONAL START ATTEMPTS MAY BE MADE, AFTER WHICH A ONE (1) HOUR COOL-DOWN PERIOD MUST BE OBSERVED.

   NOTE: For airplanes having ASC 465 (36-150[G] APU), it is acceptable for the APU EGT synoptic indication to go into the amber or red range during start. The synoptic indication only reflects running limitations.

When APU is up to speed (100% ±3%):

6. Electric Master Auxiliary Power ....ON
7. Auxiliary Power Loadings ....OBSERVE

   With the APU operating and auxiliary power selected ON, constant frequency AC power is available to power the Main AC busses; either automatically, if the respective Main AC Bus AUTO switch is selected, or manually, if the respective APU / EXT switch is selected. See the limitations that follow.

APU Operating Envelope (SN 1000 through 1155 without APU Loadmeter):

Starting: 15,000 ft and below / 250 KCAS maximum

Continued on next page →

APU Inflight Operation - Alternate Electrical Source, ctd...

AFM 3-04-20

Running: 35,000 ft and below / VMO/MMO maximum
Load: SL to 22,000 ft: 100% (30 KVa)
22,000 to 30,000 ft: linear decrease to 50% (15 KVa)

END

APU Inflight Operation - ELWS (Loadmeter) / ASC 420 Procedures

AFM 3-04-30

For airplanes SN 1156 and subs; airplanes SN 1000 thru SN 1155 with APU loadmeter installed or removed by ASC 420; SN 1430 and subs.

To start APU in flight:

1. Descend to 15,000 ft. or below and reduce airspeed to 250 KCAS or less.
2. Battery 1 and 2 Switches .... ON
3. APU Fire Warning .... CHECK
4. APU Master Switch .... ON
5. APU Start Button .... PUSH

   CAUTION: APU STARTER IS LIMITED TO THREE (3) CONSECUTIVE START ATTEMPTS, THIRTY (30) SECONDS ON, FOLLOWED BY TWENTY (20) MINUTE COOL-DOWN PERIOD. THEN, THREE (3) ADDITIONAL START ATTEMPTS MAY BE MADE, AFTER WHICH A ONE (1) HOUR COOL-DOWN PERIOD MUST BE OBSERVED.

When APU is up to speed (100% +3%):

6. Electric Master Auxiliary Power .... ON
7. Auxiliary Power Loadings .... OBSERVE
   See the limitations at end of this procedure.

   NOTE: If flight is continued above 30,000 ft., the following steps must be accomplished to ensure continuous APU operation.

If the Left Converter / Alternator is inoperative, complete Steps 8 through 12.

8. Electric Master RIGHT Power .... ON
9. Left AC Main APU / EXT .... ON (MANUALLY SELECT)

Continued on next page →

APU Inflight Operation - ELWS (Loadmeter) / ASC 420 Procedures, ctd… **AFM 3-04-30**

10. Right AC Main RIGHT ....ON (MANUALLY SELECT)
11. Left DC Main TRU / EXT ....ON (MANUALLY SELECT)
12. Right DC Main RIGHT ....ON (MANUALLY SELECT)

If Right Converter / Alternator is inoperative, complete Steps 13 through 17.

13. Electric Master LEFT Power.................ON (MANUALLY SELECT)
14. Left AC Main LEFT ....ON (MANUALLY SELECT)
15. Right AC Main APU / EXT ....ON (MANUALLY SELECT)
16. Left DC Main LEFT...............................ON (MANUALLY SELECT)
17. Right DC Main TRU / EXT....................ON (MANUALLY SELECT)

For either Converter / Alternator inoperative, continue:

18. Essential AC AUTO ....ON
19. Essential DC AUTO...ON
20. Electrical Loadmeter (If Installed)..ON
21. Electrical Loadmeter (If Installed) Green Arc .... CHECK

For airplanes SN 1430 and subs, and airplanes with ASC 420:

22. Windshield Heat .... AS REQUIRED
    A. Left Converter Failed...RF/LS – OFF
    B. Right Converter Failed ....LF/RS – OFF

APU Operating Envelope (SN 1156 and subs; SN 1000 through 1155 with APU Loadmeter installed (or removed by ASC 420), SN 1430 and subs, ASC 465 (36-150[G] APU):

Starting: 15,000 ft and below / 250 KCAS maximum
Running: 35,000 ft and below / VMO/MMO maximum
Load: Sea level to 15,000 ft.*: 100% (30 kVA)
15,000 ft. to 30,000 ft..: 75% (22.5 kVA)
30,000 to 35,000 ft.: 50% (15 kVA)
Load-shedding may be required.
* 20,000 ft. if airspeed is kept below 300 KIAS

END

APU Alternator Failure

AFM 3-04-40

An APU alternator failure (as indicated by lack of AUX PWR on Electrical Master Panel and / or AUX AC POWER FAIL amber caution message on CAS) will have no effect as long as both engine driven Alternator / Converters continue to function. Backup power for Alternator / Converter failures, however, has been lost.

1. Auxiliary Power Switch ... CYCLE OFF (10 SECONDS), THEN ON

If condition remains same:

2. Auxiliary Power Switch .... OFF

END

Suspected Erroneous / Unreliable Airspeed Indications

AFM 4-18-60

If one or more airspeed indications (including standby airspeed) is erroneous or unreliable (with or without DADC failures), stabilize pitch, power setting (fuel flow), and normalized angle of attack on the AOA indicator, as appropriate to the phase of flight.

1. Clean Configuration: 0.50 or Lower ....ESTABLISH
2. Flaps 10, 20, or 39: 0.59 or Lower Until on Approach .... SET

If an overspeed condition is displayed or the overspeed aural warning is generated, check pitch, power setting, and AOA. Maintain AOA between 0.30 and 0.50.

CAUTION: IF THE OVERSPEED CONDITION PERSISTS, REDUCE POWER SETTING AND INCREASE AOA TO MAINTAIN LEVEL FLIGHT. DO NOT USE AN AOA HIGHER THAN 0.50.

3. Autopilot and Autothrottle .... DISCONNECT
4. Flight Path Angle (FPA) (SPZ-8400)........ SELECT FOR DISPLAY
5. Pitot and Standby Pitot Heaters ....VERIFY ON
6. Pitot and Standby Pitot HTR CB's.....................CHECK / PUSH IN
7. Icing Conditions...................... DEPART AS SOON AS POSSIBLE

Continued on next page →

Suspected Erroneous / Unreliable Airspeed Indications, ctd… **AFM 4-18-60**

8. ATC...ADVISE AS SOON AS POSSIBLE
9. Airplane...
   ....PROCEED TO NEAREST SUITABLE AIRPORT AND LAND

CRUISE:

In cruise, maintain the current attitude, power setting (fuel flow), and normalized AOA. If available, use the HUD symbology, or select FPA or the HUD Flight Director CUE on the PFD. Align the Flight Path Marker with the zero-pitch line.

1. KIAS and Predicted Airspeed (from AOM or Cruise Control Manual) ....COMPARE
2. IRS or GPS ground speed..USE

   Predicted ground speed from computerized flight plan may also be used.
3. Airspeed Source for Continued Flight ....
   ....DETERMINE IF ONE IS SUITABLE

   Continue to monitor pitch, power setting (fuel flow), and AOA.

CLIMB, if necessary:

1. Power Levers... SET TO CLIMB POWER
2. Pitch Attitude.............ADJUST TO APPROXIMATELY 5° NOSE UP
3. Flight Path Marker (SPZ-8400) ....
   ....ADJUST TO APPROXIMATELY 3° NOSE UP
4. AOA Between 0.30 and 0.50...MAINTAIN

Be alert for greatly reduced air-noise or lightening of control forces. If these conditions occur:

5. Pitch Attitude...............................ADJUST DOWN AS NECESSARY

DESCENT:

1. Power Levers..SET TO IDLE

Above 35,000 feet:

2. Pitch Attitude..SET TO 0-1° NOSE DOWN

Continued on next page →

Suspected Erroneous / Unreliable Airspeed Indications, ctd… AFM 4-18-60

3. Flight Path Marker (SPZ-8400) .... SET TO APPROXIMATELY 3° NOSE DOWN

Below 35,000 feet:

4. Pitch Attitude................................. ADJUST TO 0-2° NOSE DOWN

Be alert for increasing air-noise or Mach rumble over the canopy. If these conditions occur:

5. Pitch Attitude .... ADJUST UP AS NECESSARY

APPROACH AND LANDING:

1. ILS or RNAV Approach With an Electronic Glidepath .... UTILIZE, IF AVAILABLE
2. Landing............................... ESTABLISH CONFIGURATION EARLY
3. Approach .... FLY AT 0.59 AOA
4. Normal Landing.. PERFORM

CONDITIONS/CAUSES FOR PITOT-STATIC ICING/BLOCKAGE:

- Airspeed and altitude information is not consistent with pitch attitude and thrust setting
- Airspeed / Mach failure-flags are visible
- Airspeed is fluctuating
- A variation exists between pilot and co-pilot airspeed indications
- Overspeed indications exist
- Simultaneous overspeed and stall warnings exist
- The radome has been lost or damaged

END

Display Unit Failure AFM 3-18-10

For SPZ 8000-equipped airplanes:

1. Affected DU Circuit Breaker (CB) ....CHECK

DU #1, CP: E-6	DU #4, CP: H-6
DU #2, CP: F-6	DU #5, CP: I-6
DU #3, CP: G-6	DU #6, CP: J-6

In the event of a Display Unit failure, the following switching options are available:

1. NORM - Normal presentation.
2. PFD XFER - Display of PFD info. on DU normally used as ND.
3. ND OFF - Blanks the ND.

EICAS switching options are:

1. NORM - Normal presentation.
2. TOP CMPT - "Compacted" display of both engine instrumentation and flight crew alerting messages on DU 3.
3. BOT CMPT - "Compacted" display of both engine instrumentation and flight crew alerting messages on DU 4.

Continued on next page →

Display Unit Failure, ctd… AFM 3-18-10

For SPZ 8400-equipped airplanes:

1. Affected DU Circuit Breaker (CB) ....CHECK

DU #1, CP: E-6	DU #4, CP: H-6
DU #2, CP: F-6	DU #5, CP: I-6
DU #3, CP: G-6	DU #6, CP: J-6

In the event of Display Unit failure, automatic switching of displays occurs to the next available DU.

Manual switching is also available with the following options:

PILOT DISPLAY (PFD and ND):

1. NORM - Normal presentation.
2. PFD - Display of PFD information on DU 2.
3. ENG / EICAS:
   - With DU 3 failed, engine data is displayed on DU 2.
   - With both DU 3 and 4 inop, compact display of engine instruments and CAS messages is displayed on DU 2.

COPILOT DISPLAY (PFD and ND):

1. NORM - Normal presentation.
2. PFD - Display of PFD information on DU 5.
3. CAS / EICAS:
   - With DU 4 inop, normal CAS display is displayed on DU 5.
   - With both DU 3 and 4 inop, compact display of engine instruments and CAS messages is displayed on DU 5.

Manual reversion with all six DUs operative results in the blanking of the DU from which information has been transferred and display of that data on the appropriate DU.

END

Symbol Generator Failure

AFM 3-18-20

1. Display System Control Selector (For Failed Display).................ALT
2. Display ....MONITOR

The following table summarizes the Symbol Generator (SG) selection possibilities:

Control Switch and Position			Symbol Generator Used		
PILOT	**EICAS**	**COPILOT**	**PILOT**	**EICAS**	**COPILOT**
NORM	NORM	NORM	1	3	2
ALT	NORM	NORM	3	3	2
ALT	ALT	NORM	2	2	2R
◆ ALT	◆ ALT	◆ ALT	Red X	Red X	Red X
◇ ALT	◇ ALT	◇ ALT	1	3	2
ALT	NORM	ALT	3	3	3R
NORM	NORM	ALT	1	3	3
NORM	ALT	NORM	1	2	2
NORM	ALT	ALT	1	1	1R

NORM = Normal
ALT = Alternate
R = Repeater of source in use by opposite side
◆ = SPZ-8000 equipped airplanes
◇ = SPZ-8400 equipped airplanes

END

Traffic And Collision Avoidance System (TCAS) Failure

AFM 3-18-30

1. Equipment Failure:
   Should TCAS fail, a TCAS FAIL blue advisory message will be displayed on EICAS.
2. Circuit Protection:
   TCAS components are protected by the TCAS circuit breaker on the copilot's aft circuit breaker panel (TCAS, D-11).

END

Enhanced Ground Proximity Warning System (EGPWS) Failure

AFM 3-18-40

EGPWS components are protected by EGPWS circuit breakers on the copilot's overhead circuit breaker panel (EGPWS AC, D-10; EGPWS DC, E-10).

END

DADC Failures

AFM 3-18-50

"Flagged" DADC Failures

A "flagged" DADC failure is one where the failure is readily apparent, because of the **DADC 1 (or 2) FAIL** CAS message, and red "X's" through all four air data scales (airspeed, altitude, AOA, and vertical speed) of the PFD using the failed DADC as its air data source, as selected on the display controllers. Other confirmation of failure is as follows:

- Transponder indications
- AOA indexer failure
- Automatic cabin pressurization control problems and faulty guidance panel indications (if operating on the failed DADC)
- EICAS message indicating that EPR is receiving pressure information from the opposite DADC (EPR 1 - DADC 2 or EPR 2 - DADC 1)

If a "flagged" DADC failure has occurred:

1. Opposite (Good) DADC................SELECT AS DATA SOURCE ON DISPLAY CONTROLLERS, GUIDANCE PANEL, CABIN PRESSURE CONTROL PANEL, ETC.

Continued on next page →

"Unflagged" DADC Failures

An "unflagged" DADC failure will produce a **DADC MISCOMPARE** CAS message. The failure may not be readily apparent, but the following can be expected to occur:

- The autopilot and yaw damper will disconnect and will not re-engage until the faulty DADC has been identified and isolated by pulling its circuit breaker
- Pitch trim will remain operative

If an "unflagged" DADC failure is suspected:

1. Faulty DADC.. ATTEMPT TO IDENTIFY USING PFD COMPARATOR "IAS/ALT" WARNINGS

To determine which system is correct,

2. Independent Data Source (Standby Flight Instrumentation)........... .... ESTABLISH

With reference to independent data source established:

3. Other DADC Outputs (Pressurization System, AOA Indexers, Transponders) ....CHECK FOR INDICATIONS OF FAULTY OPERATION

If observation leads to a determination of which DADC is faulty:

4. Opposite (Good) DADC..............SELECT AS DATA SOURCE ON DISPLAY CONTROLLERS, GUIDANCE PANEL, CABIN PRESSURE CONTROL PANEL, ETC.

5. Faulty DADC......ISOLATE BY PULLING ITS CIRCUIT BREAKER (DADC #1: CP, F-3; DADC #2: CP, G-3)

When at least one (1) minute has elapsed since pulling the faulty DADC circuit breaker:

6. Autopilot... RE-ENGAGE

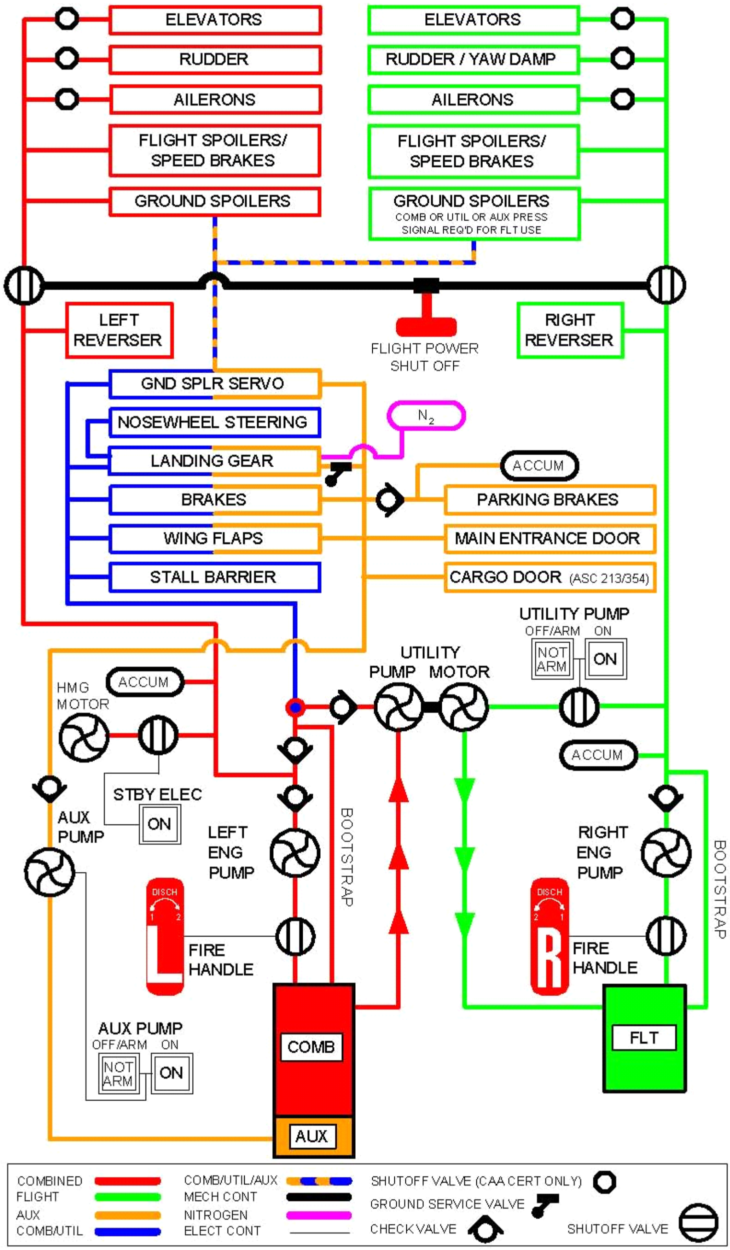
END

Notes

Brakes / Anti-Skid (Brake By Wire) Index

Related Topics In QRH

Hydraulic System Diagram



Emergency Brakes (Brake-By-Wire) AFM 4-05-10

In the event of loss of Combined, Utility, and Auxiliary System pressure, the wheel brakes may be operated by brake accumulator pressure through use of the PARK/EMERG brake handle, which by-passes pedal control. A fully charged brake accumulator allows approximately 5 to 6 applications of the PARK/EMERG handle before the pressure is depleted.

There is a noticeable delay in pressure rise when using the parking brake handle to meter pressure. Grasp the handle with fingertips only and rest the thumb near the base of the speed brake handle slot. Raise the handle carefully in ¼ inch increments to avoid excessive pressure.

CAUTION: ANTI-SKID PROTECTION IS NOT AVAILABLE WHEN USING THE EMERGENCY BRAKE SYSTEM. USE OF THE EMERGENCY BRAKE SYSTEM WHILE THE AIRPLANE IS MOVING IS STRICTLY AN EMERGENCY PROCEDURE. THE EMERGENCY BRAKE PRESSURE CAN BE METERED. CAUTION SHOULD BE USED NOT TO EXTEND HANDLE BEYOND THE POSITION WHERE BRAKING IS FIRST FELT (¼ TO ½ INCH [0.635 TO 1.27 CM]). AS THE AIRPLANE DECELERATES, REPOSITIONING (METERING) OF HANDLE (EASING IN) MIGHT BE NECESSARY TO PREVENT SUDDEN STOPPING OR TIRE SKIDDING.

END

Wheel Brake Failure (Brake-By-Wire) AFM 3-05-30

If the Combined System engine-driven pump fails, the Utility System will automatically provide power to operate brakes. If the Combined and Utility systems fail, the Auxiliary Hydraulic Pump may be utilized to operate the brakes. Anti-skid protection is available when using Combined, Utility, or Auxiliary System pressure.

CAUTION: TAKEOFF IS NOT PERMITTED WITH EITHER SINGLE OR DUAL CHANNEL FAILURE OF BRAKE-BY-WIRE SYSTEM.

END

Brake Confidence Check - Inflight (Brake-By-Wire)

AFM 3-05-40

1. ANTI-SKID .... ON
2. BRAKE NUTCRCKR ORIDE Switch.......... DEPRESS AND HOLD

   Depress and hold the BRAKE NUTCRCKR ORIDE switch for the duration of this check. Wait a minimum of ten (10) seconds.

After a minimum of ten (10) seconds has passed:

3. Left And Right Brake Pedals (Pilot Or Copilot) .... INDIVIDUALLY DEPRESS

   A. Confirm applied brake pressure proportionally tracks brake pedal deflection.

   B. Confirm brake pedal deflection does not cause applied pressure on opposite brake.

4. BRAKE NUTCRCKR ORIDE Switch...............................RELEASE

   If check is satisfactory, proceed with normal landing.

END

Uncommanded Applied Brake Pressure - Inflight (Brake-By-Wire)

AFM 3-05-50

1. Brake System Test (BITE) ....PERFORM SEVERAL TIMES IN ATTEMPT TO CLEAR UNCOMMANDED PRESSURE

   If pressure returns to normal, perform **Brake Confidence Check - Inflight (Brake-By-Wire)**, page EB-4.

If pressure remains, proceed as follows:

2. BCS CHL #1 Circuit Breaker (CPO, A-2)............................... PULL

   The **ANTI-SKID FAIL** message will illuminate on CAS. Apply brake pressure for thirty (30) seconds. Open-loop pulsed (BANG-BANG) braking will occur. Release brake pedals.

   If brake pressure returns to normal:

   A. Reset BCS CHL #1 circuit breaker. If pressure remains normal, perform **Brake Confidence Check - Inflight (Brake-By-Wire)**, page EB-4.

Continued on next page →

Uncommanded Applied Brake Pressure – Inflight (Brake-By-Wire), ctd…

AFM 3-05-50

If applied pressure remains:

B. PULL BCS CHL #2 circuit breaker (CPO, B-2.) All four (4) brake system messages will illuminate on CAS.

If brake pressure returns to normal:

C. Leave BCS CHL #2 circuit breaker out and perform **Brake Confidence Check - Inflight (Brake-By-Wire)**, page EB-4. If Brake Confidence Check is satisfactory, land with BCS CHL #2 circuit breaker out.

If uncommanded pressure remains:

D. BCS CHL #2 Circuit Breaker (CPO, B-2) .... RESET

3. ANTI-SKID .... OFF

   Cycle the affected brake pedal(s) in an attempt to clear the uncommanded pressure.

If pressure returns to normal:

A. If pressure returns to normal, land using the applicable **ANTI-SKID OFF BRAKING** procedure (see page EB-14 or EB-15).

If uncommanded applied brake pressure remains:

4. ANTI-SKID .... ON

   Assume uncommanded applied brake pressure will be present during landing. See **Landing With Applied Brake Pressure Indicated (Brake-By-Wire)**, page EB-6.

END

Landing With Applied Brake Pressure Indicated (Brake-By-Wire)

AFM 3-05-60

1. ANTI-SKID..ON
2. Brake Accumulator Pressure ....3000 PSI
3. AUX Pump.. ARMED (NOT RUNNING)

On Touchdown:

4. Reverse Thrust.......................................APPLY AS NECESSARY
5. Rudder and/or Nose Wheel Steering ....
.... USE TO MAINTAIN DIRECTIONAL CONTROL
6. DO NOT attempt to use brakes.
7. When ground speed is less than 80 knots, use the metering parking brake to stop airplane.

   CAUTION: ANTI-SKID PROTECTION IS NOT AVAILABLE. SEE THE APPROPRIATE BRAKES SYSTEM PROCEDURE IN THIS SECTION.

   A. Pull parking brake handle up approximately 1/4 - 1/2 inch.
   B. Wait for braking action to commence. Increase brake handle travel as required.
   C. As the airplane decelerates, modulate (meter) the parking brake pressure as required to prevent sudden stopping or tire skidding.

END

Uncommanded Brake Pressure During Landing Rollout (Brake-By-Wire)

AFM 3-05-70

1. Reverse Thrust.......................................APPLY AS NECESSARY
2. Rudder and/or Nose Wheel Steering ....
.... USE TO MAINTAIN DIRECTIONAL CONTROL
3. Discontinue any attempt to apply brakes - FEET OFF THE BRAKE PEDALS.
4. REAPPLY brake pressure after one (1) second.

Continued on next page →

Uncommanded Brake Pressure During Landing Rollout (Brake-By-Wire), ctd… **AFM 3-05-70**

5. If the uncommanded or undesired Brake Pressure is still present and airplane cannot be controlled, DISCONTINUE BRAKE APPLICATION.

6. When ground speed is less than 80 knots, use the metering parking brake to stop airplane.

   CAUTION: ANTI-SKID PROTECTION IS NOT AVAILABLE. SEE THE APPROPRIATE BRAKES SYSTEM PROCEDURE IN THIS SECTION.

   A. Pull parking brake handle up approximately 1/4 - 1/2 inch.

   B. Wait for braking action to commence. Increase brake handle travel as required.

   C. As the airplane decelerates, modulate (meter) the parking brake pressure as required to prevent sudden stopping or tire skidding.

END

BRAKE FAIL Message (Brake-By-Wire) AFM 3-06-10

1. ANTI-SKID.. CHECK ON
2. Applied Brake Pressure Display ....SELECT ON DU 4

If airborne:

3. BRAKE NUTCRKR ORIDE Switch .... DEPRESS
   Hold for 10 seconds and continue holding while performing Step 4.
4. Brake Pedals .... DEPRESS
   INDIVIDUALLY AND CHECK APPLIED BRAKE PRESSURE
5. BRAKE NUTCRKR ORIDE Switch ....RELEASE
6. If both left and right brake pressure is not available, see **Emergency Brakes (Brake-By-Wire)**, page EB-3.
7. If braking is available on one strut, stopping airplane with operative nosewheel steering on a dry runway is possible if braking is begun from lower speeds. Expect longer landing distances.
8. If left and right brake pressure is available, the **BRAKE FAIL** message is erroneous. Use normal braking.

END

BRAKE PEDAL Message (Brake-By-Wire) AFM 3-06-40

Use the following procedure for fault isolation of the brake pedals:

1. ANTI-SKID.. CHECK ON
2. Applied Brake Pressure Display ....SELECT ON DU 4

If airborne:

3. BRAKE NUTCRKR ORIDE Switch .... DEPRESS
   Hold 10 seconds and continue holding while performing Step 4.
4. Brake Pedals .... DEPRESS
   INDIVIDUALLY AND CHECK APPLIED BRAKE PRESSURE

   NOTE: A malfunctioning brake pedal is indicated by zero (0) or lower than normal brake pressure.
5. BRAKE NUTCRKR ORIDE Switch ....RELEASE

Continued on next page →

BRAKE PEDAL Message (Brake-By-Wire), ctd… AFM 3-06-40

6. Malfunctioning Brake Pedal(s) ....DO NOT USE
7. If no brake pressure is available from any pedal, see **Emergency Brakes (Brake By Wire)**, page EB-3.

END

Multiple Brake Failure Messages (Brake-By-Wire)

AFM 3-06-50

In case of multiple failure messages or if brake system status is unknown:

1. Brake ECU........ATTEMPT RESET FOLLOWED BY BRAKE BITE
   Allow thirty (30) seconds after the BITE for failure to recur.
2. ANTI-SKID Switch .... CHECK ON
3. Select Applied Brake Pressure Display on DU 4.

If airborne:

4. BRAKE NUTCRKR ORIDE Switch.................................DEPRESS
   Hold for 10 seconds and continue holding while performing Step 5.
5. Brake Pedals (Pilot or Copilot) ....DEPRESS INDIVIDUALLY AND VERIFY APPLIED BRAKE PRESSURE IS APPROPRIATE FOR PEDAL DEFLECTION
6. BRAKE NUTCRKR ORIDE Switch................................ RELEASE
7. If brake pressure indications are normal, use CAUTION in normal braking.
8. If abnormal or no brake pressure indications occur:
   ANTI-SKID Switch ....OFF
9. Brake Pedals (Pilot or Copilot) ....DEPRESS INDIVIDUALLY AND VERIFY APPLIED BRAKE PRESSURE IS APPROPRIATE FOR PEDAL DEFLECTION
10. If brake pressure indications are normal, see appropriate **ANTI-SKID OFF BRAKING (Brake-By-Wire)** procedure, page EB-14 or EB-15.

Continued on next page →

Multiple Brake Failure Messages (Brake-By-Wire), ctd… AFM 3-06-50

11. If abnormal or no brake pressure indications occur:
    BCS CHL #1 Circuit Breaker (CPO, A-2)............................... PULL
12. Brake Pedals (Pilot or Copilot)..................................... DEPRESS INDIVIDUALLY AND VERIFY APPLIED BRAKE PRESSURE IS APPROPRIATE FOR PEDAL DEFLECTION
13. If brake pressure indications are normal, see appropriate **ANTI-SKID OFF BRAKING (Brake-By-Wire)** procedure, page EB-14 or EB-15.
14. If abnormal or no brake pressure indications occur:
    BCS CHL #1 Circuit Breaker (CPO, A-2)............................ RESET
15. ANTI-SKID Switch .... ON
16. BCS CHL #2 Circuit Breaker (CPO, B-2)............................... PULL

    NOTE: Pulling this circuit breaker causes three (3) amber brake messages and one (1) blue brake message to illuminate on EICAS.
17. Brake Pedals (Pilot or Copilot)..................................... DEPRESS INDIVIDUALLY AND VERIFY APPLIED BRAKE PRESSURE IS APPROPRIATE FOR PEDAL DEFLECTION
18. If brake pressure indications are normal, use CAUTION in normal braking.
19. If abnormal brake pressure indications occur, see **Landing With Applied Brake Pressure Indicated (Brake-By-Wire)**, page EB-6.
20. If NO brake pressure indications occur, see **Emergency Brakes (Brake-By-Wire)**, page EB-3.

END

BTMS OVHT Light On or BRAKE OVHT Message (Brake-By-Wire)

AFM 3-06-60

ON THE GROUND:

If the OVHT light on the BTMS display and the BRAKE OVHT CAS message illuminates during ground operations:

1. Determine which brake is causing the OVHT light by slowly rotating the BTMS selector switch through each position and checking for brake temperatures exceeding:

   NOTE: For SPZ 8400 equipped airplanes, BTMS display is available only on BRAKES system page. All four (4) brake temperatures are displayed simultaneously on the BRAKES system page.

   A. 400° ±10° C (Non-ASC 190/Non-ASC 266 airplanes SN 1000 thru 1213 with ASC 167).

   B. 625° ±25° C (ASC 190/ASC 266 airplanes SN 1000 thru 1213 with ASC 346 and SN 1214 and subs.).

2. Avoid using the brake(s) that exceed the OVHT limit. Use reverse thrust as necessary to assist in stopping the airplane if required.

   NOTE: *For airplanes 1000 thru 1143 without ASC 166:* Use of thrust reversers is limited to one (1) minute every thirty (30) minutes.

3. If possible, expeditiously move the airplane to an uncongested area clear of other airplane and active taxiways/runways.

4. DO NOT SET THE PARKING BRAKE. Chock the nose gear tire if possible.

5. Monitor temperature of all brakes for trend information:

   A. If temperatures continue to rise or remain above the OVHT limit for more than five (5) minutes, expect wheel fuse plugs to release. EVACUATE all personnel and remain clear of the main landing gear area for a <u>minimum</u> of thirty (30) minutes.

      CAUTION: DO NOT ATTEMPT TO TAKEOFF WITH THE BRAKE OVHT LIGHT ON. THERE MAY <u>NOT</u> BE SUFFICIENT BRAKE KINETIC ENERGY AVAILABLE IN THE EVENT OF A REJECTED TAKEOFF OR TIRE FAILURE MAY OCCUR DURING TAKEOFF ROLL.

      NOTE: A visual inspection of the overheated wheels, tires, and brakes should be accomplished prior to the next flight.

Continued on next page →

BTMS OVHT Light On or BRAKE OVHT Message (Brake-By-Wire), ctd…

AFM 3-06-60

B. If the temperatures have peaked and the OVHT light extinguishes, the tires should be inspected for proper inflation and the brakes inspected for obvious damage before continuing the departure.

NOTE: The flight crew should consider brake energy requirements for subsequent departures with elevated brake temperatures. Refer to **GIV AFM Appendix C** for Brake Kinetic Energy and Carbon Brake Cooling chart data. (Chart shown on **QRH page PC-15**.)

IN FLIGHT:

1. Altitude ...... 20,000 FT OR BELOW (DESCEND IF NECESSARY)
2. Airspeed ....225 KCAS MAX
3. Landing Gear..EXTEND
4. Airspeed ....250 KCAS MAX
5. BTMS .... MONITOR

   NOTE: Landing gear should remain extended until the brake temperature decreases below 200°C.
6. Airspeed ....225 KCAS MAX
7. Landing Gear.. RETRACT
8. BTMS / OVHT Light.. CHECKED / OUT

   NOTE: An inspection of overheated wheels, tires, brakes, and wheel speed sensors should be accomplished before next flight. Refer to **GIV AFM Appendix C** for Brake Kinetic Energy and Carbon Brake Cooling chart data. (Chart shown on **QRH page PC-15**.)

END

Anti-Skid Failure (Brake-By-Wire) AFM 3-02-10

Takeoff:

During takeoff with anti-skid inoperative or selected OFF, wheel spindown function will be disabled.

Perform the following steps for takeoff with the anti-skid inoperative or OFF:

1. ANTI-SKID Switch .... OFF
2. Applied Brake Pressure Display........................ SELECT ON DU 4
3. Before gear retraction after lift-off, momentarily apply light brake pressure (300 to 400 psi).

Approach and landing:

If anti-skid is selected OFF, braking should be performed using the appropriate ANTI-SKID OFF BRAKING procedure, this section.

If anti-skid is not selected OFF, braking in the open loop pulsed mode (BANG - BANG) should be performed using the following procedure:

1. ANTI-SKID... CHECK ON
2. Applied Brake Pressure Display........................ SELECT ON DU 4
3. Maximum Reverse Thrust ....APPLY
4. Braking .... USE AS REQUIRED AT HIGHER SPEEDS
5. ANTI-SKID...................... OFF AT APPROXIMATELY 100 KNOTS

   NOTE: At speeds below 100 knots, the pulsing of open loop pulsed anti-skid causes braking action to be jerky.

6. ANTI-SKID OFF BRAKING Procedure ....CONSULT

   NOTE: An increase in landing distance will result if landing rollout is made with anti-skid completely inoperative or under open loop pulsed anti-skid control. For landing distances with anti-skid inoperative, refer to Landing Field Length, Anti-Skid Inoperative charts in **Performance section of GIV AFM**. Use of reverse thrust reduces landing distances.

END

Anti-Skid Off Braking (Brake-By-Wire: Without ASC 190/266)

AFM 3-02-20

FOR AIRPLANES SN 1000 THRU 1213 WITHOUT ASC 190/266

Takeoff:

During takeoff with anti-skid inoperative or selected OFF, wheel spindown function will be disabled.

Perform the following Steps for takeoff with ANTI-SKID inoperative or OFF:

1. ANTI-SKID Switch .... OFF
2. Applied Brake Pressure Display ....SELECT ON DU 4
3. Before gear retraction after lift-off, momentarily apply light brake pressure (300 to 400 psi).

Approach and landing:

Use the following procedure when braking with anti-skid selected off:

1. ANTI-SKID Switch .... OFF
2. Applied Brake Pressure Display ....SELECT ON DU 4
3. Maximum Reverse Thrust ....APPLY
4. Allow speed to decrease to approximately 100 knots before applying light braking. Gradually increase to moderate braking as speed decreases.

   NOTE: An increase in landing distance will result if landing rollout is made with anti-skid completely inoperative. For landing distances with anti-skid inoperative, refer to Landing Field Length, Anti-Skid Inoperative charts in **Performance section of GIV AFM**. Use of reverse thrust reduces landing distances.

END

Anti-Skid Off Braking (Brake-By-Wire: With ASC 190/266)

AFM 3-02-30

FOR AIRPLANES SN 1000 THRU 1213 WITH ASC 190/266

Takeoff:

During takeoff with the anti-skid inoperative or selected OFF, the wheel spindown function will be disabled. Perform the following steps for takeoff with the anti-skid inoperative or OFF:

1. ANTI-SKID Switch ....OFF
2. Applied Brake Pressure Display........................ SELECT ON DU 4
3. Prior to gear retraction after lift-off, momentarily apply light brake pressure (300-400 psi).

Approach and landing:

Use the following procedure when braking with anti-skid selected off:

1. ANTI-SKID Switch ....OFF
2. Applied Brake Pressure Display........................ SELECT ON DU 4
3. Maximum Reverse Thrust ....APPLY
4. The pilot should smoothly apply brakes to approximately 300 psi as advised by the copilot. In an anti-skid inoperative situation, the pilot should devote his attention to airplane control and the copilot should monitor applied brake pressure and advise the pilot of corrections needed to maintain 300 psi.

   CAUTION: IT IS NORMAL FOR DECELERATION TO INCREASE AS THE STOP PROGRESSES. IT IS EXTREMELY IMPORTANT TO MAINTAIN 300 PSI TO AVOID LOCKED WHEELS AND BLOWN TIRES. THERE WILL BE A SIGNIFICANT INCREASE IN LANDING DISTANCE WITH ANTI-SKID INOPERATIVE.

   NOTE: An increase in landing distance will result if landing rollout is made with anti-skid inoperative. For landing distances with anti-skid inoperative, refer to Landing Field Length, Anti-Skid Inoperative charts in **Performance section of GIV AFM**. Use of reverse thrust reduces landing distances.

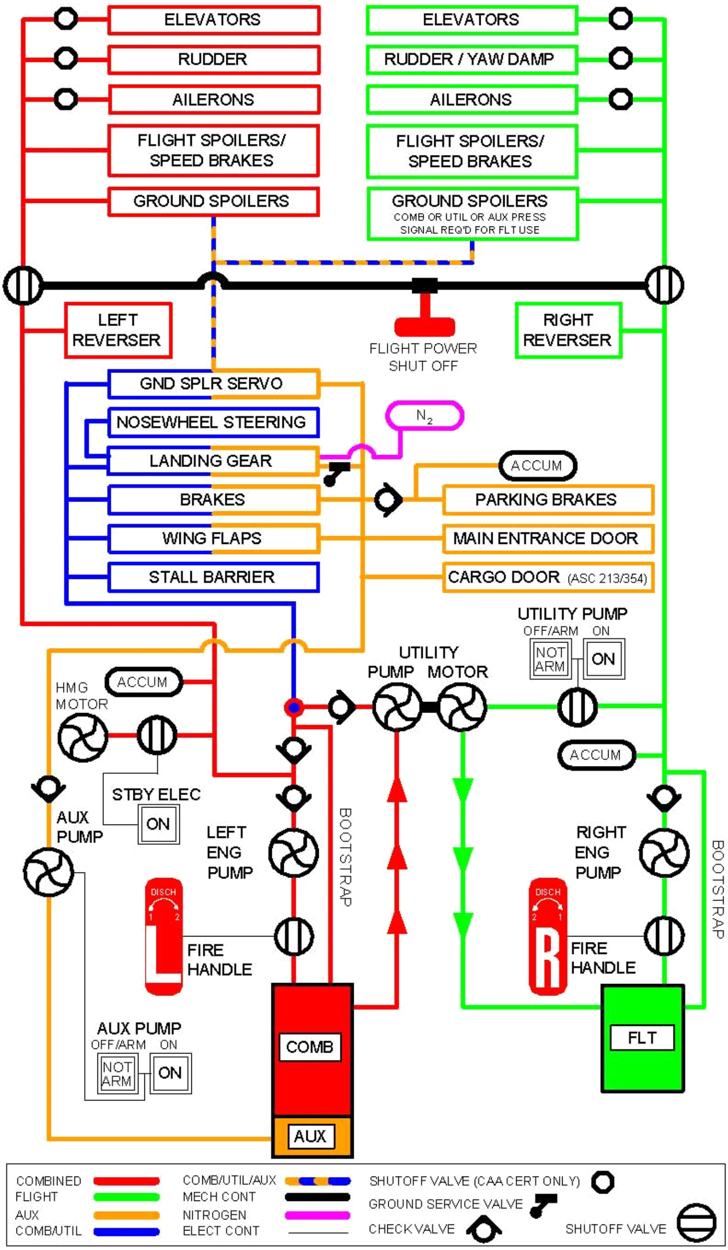
END

Notes

Brakes / Anti-Skid (HMAB) Index

Related Topics In QRH

Hydraulic System Diagram



Emergency Brakes (HMAB) AFM 4-05-20

FOR AIRPLANES SN 1183, SN 1214 AND SUBSEQUENT WITH HYDROMECHANICAL ANALOG BRAKE (HMAB) SYSTEM INCORPORATED

CAUTION: ANTI-SKID PROTECTION IS NOT AVAILABLE WHEN USING THE EMERGENCY BRAKE SYSTEM. USE OF THE EMERGENCY BRAKE SYSTEM WHILE THE AIRPLANE IS MOVING IS STRICTLY AN EMERGENCY PROCEDURE. THE EMERGENCY BRAKE PRESSURE CAN BE METERED. CAUTION SHOULD BE USED NOT TO EXTEND HANDLE BEYOND THE POSITION WHERE BRAKING IS FIRST FELT (1/4 TO 1/2 INCH [0.635 TO 1.27 CM]). AS THE AIRPLANE DECELERATES, REPOSITIONING (METERING) OF HANDLE (EASING IN) MIGHT BE NECESSARY TO PREVENT SUDDEN STOPPING OR TIRE SKIDDING.

The following procedure should be used to stop the airplane with emergency brakes:

1. Parking Brake .... SELECT
2. Anti-Skid .... OFF
3. AUX Pump .... ON

   CAUTION: DO NOT EXCEED 300 PSI INDICATED BRAKE PRESSURE WHEN APPLYING PARK / EMERG BRAKES.

4. Parking Brake .... AS REQUIRED TO 300 PSI

END

Wheel Brake Failure (HMAB) AFM 3-05-30

If the Combined System engine-driven pump fails, the Utility System will automatically provide power to operate brakes. If the Combined and Utility systems fail, the Auxiliary Hydraulic Pump may be utilized to operate the brakes. Anti-skid protection is available when using Combined, Utility, or Auxiliary System pressure.

CAUTION: TAKEOFF IS NOT PERMITTED WITH EITHER SINGLE OR DUAL CHANNEL FAILURE OF BRAKE SYSTEM.

END

Auxiliary Braking (HMAB) AFM 3-05-80

FOR AIRPLANES SN 1183, SN 1214 AND SUBS AND AIRPLANES SN 1000 THRU 1213 WITH ASC 307

1. HYDRAULIC SYSTEM Display .... SELECT
   Select HYDRAULIC SYSTEM display on EICAS to show applied brake pressure.
2. Auxiliary Hydraulic Pump .... ON
3. Braking .... AS REQUIRED

END

BRAKE FAIL Message (HMAB) AFM 3-06-20

FOR AIRPLANES SN 1183, 1214 AND SUBS. WITH THE HYDRO-MECHANICAL ANALOG BRAKE SYSTEM INCORPORATED

If warning occurs in flight:

1. Applied Brake Pressure Display ....SELECT ON DU 4
2. Hydraulic Pressures ....CHECK

If combined pressure is normal:

3. Auxiliary Hydraulic Pump .... OFF
4. Anti-Skid Switch .... OFF
5. Brakes ....APPLY

If applied brake pressure indicates normal, the message was false. Proceed with Steps 6, 9 and 10.

6. Auxiliary Hydraulic Pump .... ARMED

If combined system has failed:

7. Auxiliary Hydraulic Pump ....ARMED / ON
8. Brakes ....APPLY

If applied brake pressure indicates normal, see Auxiliary Braking (HMAB), this page.

9. Anti-Skid Switch ....ON
10. INBD ANTI-SKID, OTBD ANTI-SKID Circuit Breakers (CPO: A-2, B-2)...IN

Continued on next page →

BRAKE FAIL Message (HMAB), ctd… AFM 3-06-20

If warning occurs during landing:

11. Park / Emergency Brake.. AS REQUIRED
    See **Emergency Brakes (HMAB)**, page EB-3.

END

BRAKE MAINT REQ'D Message (HMAB) AFM 3-06-30

For airplanes SN 1183, 1214 and subs:

A wheel speed miscompare lasting more than five (5) seconds will illuminate the **BRAKE MAINTENANCE REQ'D** message.

If the message occurs in flight, investigate after landing. This message may appear if the landing gear is left down after takeoff and there is a difference in wheel spindown rates.

If message occurs on the ground, limited troubleshooting can be accom-plished by performing an anti-skid test at a speed of 10 knots or less.

On ground only:

If the **ANTI-SKID FAIL** message illuminates during the test, a fault exists which can be isolated by performing a system test on the Skid Control Box (SCB).

END

BTMS OVHT Light On or BRAKE OVHT Message (HMAB) AFM 3-06-60

ON THE GROUND:

If the OVHT light on the BTMS display and the BRAKE OVHT CAS message illuminates during ground operations:

1. Determine which brake is causing the OVHT light by slowly rotating the BTMS selector switch through each position and checking for brake temperatures exceeding:

   NOTE: For SPZ 8400-equipped airplanes, BTMS display is available only on BRAKES system page. All four (4) brake temperatures are displayed simultaneously on the BRAKES system page.

Continued on next page →

BTMS OVHT Light On or BRAKE OVHT Message (HMAB), ctd…

AFM 3-06-60

A. 400° ±10° C (Non-ASC 190/Non-ASC 266 airplanes SN 1000 thru 1213 with ASC 167.)

B. 625° ±25° C (ASC 190/ASC 266 airplanes SN 1000 thru 1213 with ASC 346 and SN 1214 and subs.).

2. Avoid using the brake(s) that exceed the OVHT limit. Use reverse thrust as necessary to assist in stopping the airplane if required.

   NOTE: *For airplanes 1000 thru 1143 without ASC 166:* Use of thrust reversers is limited to one (1) minute every thirty (30) minutes.

3. If possible, expeditiously move the airplane to an uncongested area clear of other airplane and active taxiways/runways.

4. DO NOT SET THE PARKING BRAKE. Chock the nose gear tire if possible.

5. Monitor temperature of all brakes for trend information:

   A. If temperatures continue to rise or remain above the OVHT limit for more than five (5) minutes, expect wheel fuse plugs to release. EVACUATE all personnel and remain clear of the main landing gear area for a minimum of thirty (30) minutes.

      CAUTION: DO NOT ATTEMPT TO TAKEOFF WITH THE BRAKE OVHT LIGHT ON. THERE MAY NOT BE SUFFICIENT BRAKE KINETIC ENERGY AVAILABLE IN THE EVENT OF A REJECTED TAKEOFF OR TIRE FAILURE MAY OCCUR DURING TAKEOFF ROLL.

      NOTE: A visual inspection of the overheated wheels, tires, and brakes should be accomplished prior to the next flight.

   B. If the temperatures have peaked and the OVHT light extinguishes, the tires should be inspected for proper inflation and the brakes inspected for obvious damage before continuing the departure.

      NOTE: The flight crew should consider brake energy requirements for subsequent departures with elevated brake temperatures. Refer to **GIV AFM Appendix C** for Brake Kinetic Energy and Carbon Brake Cooling chart data. (Chart shown on **QRH page PC-15**.)

IN FLIGHT:

1. Altitude ...... 20,000 FT OR BELOW (DESCEND IF NECESSARY)
2. Airspeed ....225 KCAS MAX

Continued on next page →

BTMS OVHT Light On or BRAKE OVHT Message (HMAB), ctd…

AFM 3-06-60

3. Landing Gear .... EXTEND
4. Airspeed .... 250 KCAS MAX
5. BTMS .... MONITOR

   NOTE: Landing gear should remain extended until the brake temperature decreases below 200° C.

6. Airspeed .... 225 KCAS MAX
7. Landing Gear .... RETRACT
8. BTMS / OVHT Light .... CHECKED / OUT

   NOTE: An inspection of overheated wheels, tires, brakes, and wheel speed sensors should be accomplished before next flight. Refer to **GIV AFM Appendix C** for Brake Kinetic Energy and Carbon Brake Cooling chart data. (Chart shown on **QRH page PC-15**.)

END

Anti-Skid Failure (HMAB)

AFM 3-02-40

FOR AIRPLANES SN 1183, 1214 AND SUBS

A failure occurring in the brake system which renders the anti-skid inoperative will be indicated by illumination of the **ANTI-SKID FAIL** message on the EICAS.

There is no automatic reversion to auxiliary braking unless the combined/utility hydraulic system fails.

If the anti-skid switch is left ON there may still be anti-skid protection on one pair of wheels (inboard or outboard). With the anti-skid switch OFF all anti-skid protection is disabled.

Braking with the **ANTI-SKID FAIL** message illuminated should be performed using the Anti-Skid Off Braking procedure in this section.

END

Anti-Skid Off Braking (HMAB)

AFM 3-02-50

FOR AIRPLANES SN 1183, 1214 AND SUBS

During takeoff with anti-skid inoperative or selected OFF, wheel spindown function will be functional.

Takeoff with the anti-skid inoperative or selected OFF:

1. ANTI-SKID Switch .... OFF
2. Applied Brake Pressure Display.........................SELECT ON DU 4

Approach and landing with anti-skid inoperative:

1. ANTI-SKID Switch .... ON
2. Applied Brake Pressure Display.........................SELECT ON DU 4
3. Maximum Reverse Thrust ....APPLY
4. Immediately upon landing or at takeoff abort, the pilot should smoothly apply brakes to approximately **300 psi** as advised by the copilot. In an anti-skid inoperative situation, the pilot should devote his attention to airplane control and the copilot should monitor applied brake pressure and advise the pilot of corrections needed to maintain **300 psi**.

   CAUTION: IT IS NORMAL FOR DECELERATION TO INCREASE AS THE STOP PROGRESSES. IT IS EXTREMELY IMPORTANT TO MAINTAIN 300 PSI TO AVOID LOCKED WHEELS AND BLOWN TIRES. THERE WILL BE A SIGNIFICANT INCREASE IN LANDING DISTANCE WITH ANTI-SKID INOPERATIVE.

   NOTE: Brake pedal position in relation to brake pressure can be observed and practiced airborne with the anti-skid system selected OFF, and the landing gear up or down.

   NOTE: An increase in landing distance will result if landing rollout is made with anti-skid completely inoperative. For landing distances with anti-skid inoperative, refer to Landing Field Length, Anti-Skid Inoperative charts in Performance section of **GIV AFM**. Use of reverse thrust reduces landing distances.

END

Engines Index

Continued on next page →

Related Topics In QRH

Engine Failure Below V1 — AFM 4-09-20

1. Power Levers .... IDLE

   NOTE: Autothrottle will disconnect.

2. Maximum Anti-Skid Braking .... AS REQUIRED
3. Speed Brakes....................................... DEPLOY IMMEDIATELY

   NOTE: Ground spoilers should deploy automatically when the power levers are closed during an aborted takeoff. Speed brake deployment is a required backup procedure.

4. Thrust Reversers.. AS REQUIRED

   NOTE: During a rejected takeoff, reverse thrust may be used to bring the airplane to a stop (zero ground speed). If reverse thrust is used during a rejected takeoff down to zero ground speed, report the occurrence for maintenance.

5. Tower .... NOTIFY

When clear of the runway:

6. Appropriate Abnormal / Emergency Checklist ....COMPLETE
7. **AFTER LANDING** Checklist (Pg. NF-1) ....COMPLETE

END

Engine Failure Above V_1

AFM 4-09-30

1. Directional Control .... MAINTAIN

   NOTE: Autothrottle will disconnect.

2. V_R Speed .... ROTATE
3. V_2 Speed .... ATTAIN AFTER LIFT-OFF

   NOTE: Additional rudder input will be required when nose wheel lifts off.

4. Landing Gear .... UP AFTER POSITIVE RATE OF CLIMB IS ESTABLISHED

   NOTE: If gear does not retract normally, manually select utility pump ON.

   NOTE: If engine failure should occur after passing V_2 on takeoff, it is recommended that the speed at the time of engine failure (up to V_2 +10 knots) be maintained. A speed of V_2 +10 knots in single-engine takeoff configuration will produce the maximum climb gradient available.

Continue climb at V_2 to 1500 ft above airport level, accelerate to V_2 +10, then:

NOTE: For an obstacle above 1500 feet AGL or a SID that requires a climb to more than 1500 feet AGL, continue climbing at V_2 speed with flaps in the takeoff position until the obstacle is cleared or the SID has been satisfied. Refer to **AFM Section 5.6** **Obstacle Clearance Limited Performance** to determine if an increased level-off altitude is required.

5. Flaps..............UP AFTER V_2 +10 ATTAINED AT 1500 FT ABOVE AIRPORT LEVEL

   NOTE: If the flaps do not retract normally, manually select Utility and AUX Pumps ON.

6. Airspeed ....CONTINUE ACCELERATION TO V_{SE}
7. Operating Engine Power Lever ....MCT POWER

   NOTE: Takeoff power may be maintained for ten (10) minutes during single engine operations as needed. Power should then be reduced to MCT.

8. ENGINE FAILURE / SHUT DOWN IN-FLIGHT CHECKLIST .... COMPLETE

END

Dual Engine Flameout

AFM 4-09-40

If flameout is the result of volcanic ash encounter, an immediate relight is not recommended. Reverse course to clear ash cloud and proceed to Step 4.

1. Crew Oxygen Mask (100%) .... DON
2. Power Levers .... IDLE
3. Airstart Ignition ....ON
4. Airspeed ....DESCEND AT VMO/MMO TO 25,000 FT THEN SLOW TO 210 KCAS

If engines fail to relight:

5. Passenger Oxygen Masks ....DEPLOY (IF REQUIRED)
6. Power Levers .... IDLE
7. HP Fuel Cocks ....SHUT

If below 28,000 ft., proceed to Step 15, otherwise:

8. Airstart Ignition .... OFF
9. Battery Switches 1 and 2 .... ON (VERIFY)
10. Essential AC / DC Buses .... E INV / BATT (VERIFY)
11. Electric Master Power Switches............................. OFF (L AND R)
12. Crossflow / Boost Pumps ....OPEN / ONE MAIN - ON
13. Electrical Load.......................REDUCE AS SITUATION PERMITS
14. Bleed Air Switches .... OFF
15. Symbol Generators 2 and 3 .... ALTERNATE
16. EICAS Display...............................TOP COMPACT (IF DESIRED)

When within airstart envelope (Below 25,000 ft., 200-324 KCAS):

17. Fire Handles ....IN
18. Crossflow / Boost Pumps ....OPEN / ONE MAIN - ON
19. Airstart Ignition ....ON
20. Engine RPM (HP and LP) .... INDICATING

Continued on next page →

Dual Engine Flameout, ctd… AFM 4-09-40

21. HP Fuel Cocks (One at a Time) .... OPEN (CHECK FOR FUEL FLOW)

    NOTE: Use clock to time measurements of thirty (30) second airstart attempts and engine drain time cycles.

22. Engine Parameters .... MONITOR

    CAUTION: ENGINE DAMAGE MAY RESULT IF RPM IS NOT ALLOWED TO STABILIZE AT IDLE BEFORE ADVANCING POWER LEVERS.

If engine does not relight within thirty (30) seconds or if engine does not reach idle:

23. HP Fuel Cocks .... SHUT
24. Airstart Ignition .... OFF

Allow engines to drain for thirty (30) seconds.

25. Begin airstart procedure with Step 17.

After relight of one or both engines occurs:

26. Electrical Power .... AS REQUIRED
27. Bleed Air Switches / Isolation Valve .... AS REQUIRED

    NOTE: With both engines running the configuration is BOTH BLEEDS - ON, BOTH ECS PACKS - ON, and ISOLATION VALVE - CLOSED.

    NOTE: With one engine running the configuration is OPERATING ENGINE BLEED - ON, BOTH ECS PACKS - ON, and ISOLATION VALVE - OPEN.

28. Pressurization .... RESET AS REQUIRED
29. "E" Batts .... ARM
30. Airstart Ignition .... OFF
31. Cowl / Wing Anti-Ice .... AS REQUIRED
32. Windshield Heat .... CYCLE OFF / ON
33. Fuel Balance .... MONITOR
34. APU .... START - IF REQUIRED

END

Dual Engine Out Speeds For Maximum Range CCM

Weight	75,000	70,000	65,000	60,000	55,000	50,000	45,000
KIAS	203	196	188	181	173	164	155

Glide Ratio = Approximately 15:1

Dual Engine Out Approach and Landing AFM 4-09-50

1. APU (If Available)........................ START (ONE ATTEMPT ONLY)
2. Starting Point..
   .... ESTABLISH 5,000 FT AGL OVER LANDING AREA
3. Flaps..10° (EXTEND WITH AUX PUMP)
4. Airspeed ....VREF FOR 10° FLAPS +20 KCAS
5. 180° Position ....BANK TO ESTABLISH
   A 25 degree bank will bring the airplane to a 180-degree position at about 2,500 ft. AGL.
6. Flaps..20° (EXTEND WITH AUX PUMP)
7. Bank Angle ....MAINTAIN TO HIGH FINAL
   The bank angle should be held at 25 degrees or as necessary for turning to high final, depending on winds.
8. Airspeed ....175 KCAS OR LESS
9. Emergency Landing Gear T-Handle .... PULL
   NOTE: Ensure landing gear handle is DOWN for proper gear position indication and nose wheel steering operation. Operation of emergency system is not predicated on position of the selector handle.
10. With Landing Gear Down and Locked ....OBSERVE LANDING GEAR EXTENDED SPEED LIMITATION (250 KCAS / 0.7 MT)
11. Final Approach Turn.......................................800 to 1000 FT AGL
12. AUX PUMP .... ON FOR LANDING
13. Flaps ....20°
    NOTE: As airspeed is reduced on final, for landing, hydraulic fluid flow decreases and flight controls may become less responsive. Do not use speed brakes if possible, as this could hasten loss of hydraulic pressure.

Continued on next page →

Dual Engine Out Approach and Landing, ctd… **AFM 4-09-50**

14. Brakes .... AS NECESSARY TO STOP
15. Emergency Brakes.................... PREPARE TO USE IF REQUIRED

END

Engine Failure / Shutdown In Flight

AFM 4-10-10

1. Operating Engine Power Lever .... ADJUST

   NOTE: Autothrottle will disengage.
2. Engine Synchronizer .... OFF
3. Power Lever (Failed Engine).. IDLE

   WARNING: **VERIFY PROPER ENGINE (LEFT OR RIGHT).**
4. HP Fuel Cock (Failed Engine)... SHUT
5. Tone Warning ....SILENCE
6. Fuel Boost Pumps (Failed Engine)... OFF
7. Airstart Ignition (Failed Engine) .... OFF
8. Electric Master Power (Failed Engine).................................. OFF
9. Electrical Load .... CHECK / MONITOR

   NOTE: The APU may be used as an alternate source of electrical power, if desired. See the appropriate APU Inflight Operation procedure in the **Avionics / Electrics / APU Index**, page EA-1.

   NOTE: If an engine is shut down due to extreme vibration, consideration should be given to pulling the FIRE handle to shut off fluids.
10. Bleed Air Switch (Failed Engine)... OFF
11. Isolation Valve .... OPEN
12. Utility Hydraulic Pump (Left Engine Failed)................................ON
13. Auxiliary Hydraulic Pump (Left Engine Failed)........................ ARM
14. TCAS ....TA ONLY
15. Fuel Balance... MONITOR / MAINTAIN

    NOTE: See **One (1) Engine Inoperative Landing Procedure**, page EC-12.

END

Engine Out Driftdown - ISA, 76,000 to 58,000 Pounds

CCM

ENGINE OUT DRIFTDOWN
ISA

INITIAL ALT OAT (°C)			INITIAL DRIFTDOWN WEIGHT - 1000 LB									
			76	74	72	70	68	66	64	62	60	58
45000 -56.5	SPEED	KCAS	****	****	****	246	243	241	238	236	233	230
	TIME	MIN	****	****	****	51	50	49	48	48	46	46
	FUEL	LB	****	****	****	2400	2310	2206	2122	2074	1948	1916
	DISTANCE	NM	****	****	****	318	313	306	302	300	290	290
	FINAL ALT	FT	****	****	****	21300	22300	23200	24200	25000	26100	27000
43000 -56.5	SPEED	KCAS	****	250	247	246	243	241	239	236	233	230
	TIME	MIN	****	53	52	51	50	48	47	47	45	45
	FUEL	LB	****	2567	2470	2388	2296	2189	2087	2052	1920	1884
	DISTANCE	NM	****	324	319	314	309	301	294	294	282	281
	FINAL ALT	FT	****	19600	20600	21300	22300	23200	24100	25000	26100	27000
41000 -56.5	SPEED	KCAS	252	250	248	246	243	241	239	236	233	230
	TIME	MIN	53	52	50	50	49	47	46	45	43	43
	FUEL	LB	2657	2547	2427	2363	2266	2155	2049	2009	1875	1835
	DISTANCE	NM	326	319	310	307	301	292	283	282	269	268
	FINAL ALT	FT	18700	19600	20500	21300	22300	23200	24100	25000	26100	27000
39000 -56.5	SPEED	KCAS	252	250	248	246	243	241	238	237	233	230
	TIME	MIN	52	51	49	48	47	45	45	43	41	41
	FUEL	LB	2620	2507	2383	2316	2215	2102	2057	1938	1813	1770
	DISTANCE	NM	317	309	299	296	288	279	277	266	254	252
	FINAL ALT	FT	18700	19600	20500	21300	22300	23200	24100	24900	26100	27000
37000 -56.5	SPEED	KCAS	252	250	248	246	243	241	238	237	233	230
	TIME	MIN	51	49	47	46	45	43	43	41	40	38
	FUEL	LB	2564	2448	2322	2253	2149	2033	1985	1864	1781	1686
	DISTANCE	NM	304	296	286	282	274	264	261	250	243	234
	FINAL ALT	FT	18700	19600	20500	21300	22300	23200	24100	24900	26000	27000
35000 -54.2	SPEED	KCAS	252	250	248	246	243	241	239	237	233	231
	TIME	MIN	49	47	45	44	43	41	40	38	37	35
	FUEL	LB	2493	2375	2247	2174	2066	1947	1881	1769	1678	1568
	DISTANCE	NM	290	281	271	266	257	247	242	232	223	212
	FINAL ALT	FT	18700	19600	20500	21300	22300	23200	24000	24900	26000	26900
33000 -50.3	SPEED	KCAS	252	250	248	246	243	241	239	237	234	231
	TIME	MIN	46	45	44	42	40	39	37	36	33	31
	FUEL	LB	2408	2287	2209	2078	1964	1890	1767	1696	1537	1423
	DISTANCE	NM	274	265	260	249	239	234	222	216	199	187
	FINAL ALT	FT	18700	19600	20400	21300	22300	23100	24000	24800	25900	26900
31000 -46.3	SPEED	KCAS	252	250	248	246	243	241	240	237	234	232
	TIME	MIN	44	43	41	40	38	36	33	32	29	26
	FUEL	LB	2306	2235	2096	2012	1889	1755	1614	1540	1363	1224
	DISTANCE	NM	257	253	241	235	224	212	198	191	172	156
	FINAL ALT	FT	18700	19500	20400	21200	22200	23100	23900	24800	25900	26800
29000 -42.4	SPEED	KCAS	252	250	248	246	244	242	240	238	235	233
	TIME	MIN	42	40	38	36	34	31	30	27	24	20
	FUEL	LB	2239	2105	1958	1865	1719	1574	1477	1326	1166	988
	DISTANCE	NM	244	233	220	213	199	185	176	160	142	121
	FINAL ALT	FT	18600	19500	20400	21200	22100	23000	23800	24700	25700	26600
27000 -38.4	SPEED	KCAS	252	251	249	247	245	242	240	238	235	233
	TIME	MIN	39	36	34	32	29	27	24	21	16	10
	FUEL	LB	2085	1925	1770	1665	1503	1390	1211	1065	822	520
	DISTANCE	NM	222	208	194	185	169	158	139	123	95	58
	FINAL ALT	FT	18600	19400	20300	21100	22000	22900	23800	24600	25600	26500
25000 -34.4	SPEED	KCAS	253	251	249	248	245	243	241	240	213	210
	TIME	MIN	34	33	30	26	24	20	16	11	****	****
	FUEL	LB	1870	1769	1592	1402	1261	1044	846	613	****	****
	DISTANCE	NM	195	186	170	151	137	115	93	66	****	****
	FINAL ALT	FT	18500	19300	20200	21000	21900	22800	23600	24300	25000	25000

27602C00

Engine Out Driftdown- ISA, 56,000 to 38,000 Pounds

CCM

ENGINE OUT DRIFTDOWN
ISA

INITIAL ALT OAT (°C)			INITIAL DRIFTDOWN WEIGHT - 1000 LB									
			56	**54**	**52**	**50**	**48**	**46**	**44**	**42**	**40**	**38**
	SPEED	**KCAS**	228	225	219	216	215	213	211	207	203	199
45000	**TIME**	**MIN**	44	43	42	40	38	36	34	31	30	29
-56.5	**FUEL**	**LB**	1783	1712	1631	1526	1411	1338	1219	1116	1048	982
	DISTANCE	**NM**	277	272	266	254	241	233	217	203	195	186
	FINAL ALT	**FT**	28000	29000	30400	31500	32400	33300	34300	35400	36400	37400
	SPEED	**KCAS**	228	225	219	216	215	212	211	207	203	200
43000	**TIME**	**MIN**	42	41	40	38	36	34	31	29	28	26
-56.5	**FUEL**	**LB**	1748	1673	1586	1478	1362	1289	1165	1057	983	914
	DISTANCE	**NM**	267	260	253	240	226	218	201	186	176	166
	FINAL ALT	**FT**	28000	29000	30400	31500	32400	33400	34300	35400	36400	37300
	SPEED	**KCAS**	228	225	219	216	215	213	211	207	204	200
41000	**TIME**	**MIN**	40	39	38	36	33	32	29	26	24	23
-56.5	**FUEL**	**LB**	1697	1619	1527	1415	1297	1217	1091	975	896	842
	DISTANCE	**NM**	253	246	237	224	209	200	182	165	154	146
	FINAL ALT	**FT**	28000	29000	30400	31500	32400	33300	34300	35400	36300	37200
	SPEED	**KCAS**	228	225	220	217	215	213	211	207	204	201
39000	**TIME**	**MIN**	39	38	35	33	30	28	26	23	20	17
-56.5	**FUEL**	**LB**	1674	1590	1442	1327	1207	1120	1022	889	788	675
	DISTANCE	**NM**	243	235	218	204	189	178	164	144	129	110
	FINAL ALT	**FT**	27900	28900	30300	31400	32400	33300	34200	35300	36200	37100
	SPEED	**KCAS**	228	225	221	218	215	213	211	208	205	200
37000	**TIME**	**MIN**	37	35	32	29	27	25	21	17	12	6
-56.5	**FUEL**	**LB**	1585	1494	1331	1207	1117	1014	859	697	537	321
	DISTANCE	**NM**	224	215	195	179	168	154	131	106	79	40
	FINAL ALT	**FT**	27900	28900	30200	31300	32300	33200	34200	35200	36100	36900
	SPEED	**KCAS**	229	226	221	217	216	214	212	208	175	171
35000	**TIME**	**MIN**	33	31	29	25	22	18	13	6	****	****
-54.2	**FUEL**	**LB**	1460	1360	1224	1075	919	780	601	326	****	****
	DISTANCE	**NM**	201	190	173	154	132	112	84	39	****	****
	FINAL ALT	**FT**	27800	28800	30100	31300	32200	33100	34000	34900	35000	35000
	SPEED	**KCAS**	229	226	222	218	216	212	182	179	175	172
33000	**TIME**	**MIN**	29	26	23	19	14	6	****	****	****	****
-50.3	**FUEL**	**LB**	1301	1178	1003	837	635	331	****	****	****	****
	DISTANCE	**NM**	174	159	136	114	85	38	****	****	****	****
	FINAL ALT	**FT**	27800	28800	30000	31100	32000	32900	33000	33000	33000	33000
	SPEED	**KCAS**	230	227	223	217	183	183	183	180	176	173
31000	**TIME**	**MIN**	23	21	15	6	****	****	****	****	****	****
-46.3	**FUEL**	**LB**	1078	956	693	336	****	****	****	****	****	****
	DISTANCE	**NM**	139	124	88	37	****	****	****	****	****	****
	FINAL ALT	**FT**	27700	28600	29800	30900	31000	31000	31000	31000	31000	31000
	SPEED	**KCAS**	230	228	198	195	192	188	185	182	178	175
29000	**TIME**	**MIN**	17	11	****	****	****	****	****	****	****	****
-42.4	**FUEL**	**LB**	814	542	****	****	****	****	****	****	****	****
	DISTANCE	**NM**	99	64	****	****	****	****	****	****	****	****
	FINAL ALT	**FT**	27500	28400	29000	29000	29000	29000	29000	29000	29000	29000
	SPEED	**KCAS**	206	202	199	196	193	189	186	182	179	176
27000	**TIME**	**MIN**	****	****	****	****	****	****	****	****	****	****
-38.4	**FUEL**	**LB**	****	****	****	****	****	****	****	****	****	****
	DISTANCE	**NM**	****	****	****	****	****	****	****	****	****	****
	FINAL ALT	**FT**	27000	27000	27000	27000	27000	27000	27000	27000	27000	27000
	SPEED	**KCAS**	207	204	201	198	195	191	188	184	181	177
25000	**TIME**	**MIN**	****	****	****	****	****	****	****	****	****	****
-34.4	**FUEL**	**LB**	****	****	****	****	****	****	****	****	****	****
	DISTANCE	**NM**	****	****	****	****	****	****	****	****	****	****
	FINAL ALT	**FT**	25000	25000	25000	25000	25000	25000	25000	25000	25000	25000

27603C00

Airstart - Immediate
AFM 4-10-20

1. Power Lever .... IDLE
2. Air Start Ignition .... ON

   NOTE: Successful relight is indicated by RPM stabilizing at idle. Allow engine(s) to stabilize prior to advancing power lever(s). Check that engine(s) responds normally and monitor TGT prior to advancing power lever.

After Relight:

3. Airstart Ignition .... OFF

If engine fails to relight within twenty (20) seconds, close the HP fuel cock. Wait at least one (1) minute and perform the AIRSTART – NORMAL procedure that follows.

END

Airstart - Normal
AFM 4-10-30

1. Airspeed .... 200 - 324 KCAS
2. Altitude .... 25,000 FT OR BELOW
3. HP Fuel Cock ....SHUT
4. Bleed Air (Affected Engine) / ISOL VLV...................... OFF / OPEN
5. Fire Handle...IN
6. Power Lever .... IDLE
7. Fuel Boost Pumps ....ALL ON
8. Cowl / Wing Anti-Ice (Affected Side)...................................... OFF
9. Airstart Ignition .... ON (CHECK IGN MESSAGE ON)
10. Engine RPM (HP and LP) .... INDICATING
11. HP Fuel Cock ....OPEN (CHECK FOR FUEL FLOW)

    CAUTION: DO NOT ATTEMPT TO METER HP FUEL COCK LEVER AT INTERMEDIATE POSITIONS.

12. RPM / TGT .... MONITOR
13. Oil Temperature / Pressure..CHECK

Continued on next page →

Airstart - Normal, ctd… AFM 4-10-30

14. Hydraulic Pressure .... CHECK
15. Airstart Ignition..OFF (AT IDLE RPM)
16. Electric Master Power.. ON / CHECK
17. ISOL VLV .... CLOSED
18. Bleed Air ....ON
19. Cowl / Wing Anti-Ice (Affected Side) .... AS REQUIRED

    NOTE: At high true airspeeds, it may be necessary to advance power lever slightly to assist engine RPM acceleration. On advancing the power lever, HP RPM should steadily increase toward idle. Monitor TGT.

    NOTE: The engine should normally light up within ten (10) seconds and reach idling RPM in approximately forty-five (45) seconds. When the engine runs satisfactorily, select Airstart Ignition OFF (IGN Message OUT). Advance power lever slowly to desired RPM.

If the engine fails to relight after airstart ignition has been energized for thirty (30) seconds, or if it appears unlikely that the engine will accelerate to idle, proceed as follows:

1. HP Fuel Cock .... SHUT
2. Airstart Ignition.................................... OFF (IGN MESSAGE OUT)
3. Power Lever .... IDLE

Before attempting another relight, allow engine to drain for at least thirty (30) seconds. Try again at lower altitude.

END

One (1) Engine Inoperative Landing Procedure

AFM 4-10-40

1. Normal **Before Landing** Checklist (Page NE-3) ....COMPLETE
2. Airspeed .... VREF (FOR 20° FLAPS) +10 KCAS

At Final Approach Fix:

3. Flaps...39°

   NOTE: If the flight crew elects to land at flaps 20°, fly the approach at VREF for 20° flaps + 10 knots. See the **Performance section** for landing distance in the flaps 20° configuration. Engines do not go to high idle at flaps 20°. See **Partial or Jammed Flaps Landings**, page EE-9.

4. Airspeed ....VREF 39° FLAPS + 10 KNOTS

   NOTE: If strong winds are present, add to VREF ½ of the steady state wind plus the full gust to a maximum additive of 20 knots.

After Landing:

5. Operating Engine Thrust Reverser .... AS REQUIRED

END

One (1) Engine Inoperative Go-Around Procedure

AFM 4-10-50

1. Power Lever ......GO-AROUND POWER ON OPERATING ENGINE
2. Flaps...20°
3. Airspeed ....
   APPROACH CLIMB SPEED (VREF FOR 39° FLAPS + 10 KNOTS)
4. Landing Gear (After Positive Rate Of Climb Established) .... UP
5. Altitude .... CLIMB TO 1,500 FEET ABOVE AIRPORT LEVEL
6. Flaps..............................UP AT VREF FOR 20° FLAPS +20 KCAS
7. Airspeed ....MAINTAIN FOR ADEQUATE STALL MARGIN
8. Operating Engine Power Lever ....
   ....MAXIMUM CONTINUOUS POWER

   NOTE: Final segment climb performance is based on setting maximum continuous power on operating engine.

END

Reverse Thrust Unlock or Deploy During Takeoff

AFM 4-24-10

If below V_1:

1. Takeoff .... ABORT
2. Engine Failure Below V_1 Checklist .... PERFORM

   NOTE: See **Engine Failure Below V_1**, page EC-2.

If above V_1:

3. Affected Engine Power Lever .... IDLE
4. Takeoff .... CONTINUE AS SINGLE ENGINE INOPERATIVE
5. Airspeed .... DO NOT EXCEED 200 KCAS
6. T/REV Emergency Stow Switch .... PRESS

If warning message and lights extinguish:

7. Airplane .... LAND AS SOON AS PRACTICAL
8. Reverse Thrust .... DO NOT USE

   NOTE: Both engines will be available for landing.

If T/R doors are believed to be actually deployed:

9. Airplane .... LAND AS SOON AS PRACTICAL
10. Reverse Thrust .... DO NOT USE
11. Affected Power Lever .... LEAVE IN IDLE
12. Flaps .... LIMIT 20°

    NOTE: See **Landing Planning**, Section PC.

13. GPWS / GND SPLR FLAP ORIDE .... ON

    CAUTION: IN ANY SITUATION WHERE A REVERSER WILL NOT RESTOW, THE AFFECTED ENGINE SHOULD BE SHUT DOWN ONLY IF REQUIRED TO MAINTAIN LEVEL FLIGHT. UNDER CERTAIN GROSS WEIGHT AND ATMOSPHERIC CONDITIONS, A SUCCESSFUL GO-AROUND MAY NOT BE POSSIBLE.

END

Reverse Thrust Unlock or Deploy During Flight

AFM 4-24-30

NOTE: The REV UNLOCK light may illuminate at high power settings if hydraulic system pressure is lost.

1. Reverse Levers .... VERIFY DOWN
2. Affected Engine Power Lever .... IDLE
3. Airspeed .... DO NOT EXCEED 200 KCAS
4. T/REV Emergency Stow Switch .... PRESS

If warning message and lights extinguish:

5. Airplane .... LAND AS SOON AS PRACTICAL
6. Reverse Thrust .... DO NOT USE

   NOTE: Both engines will be available for landing.

If T/R doors are believed to be actually deployed:

7. Airplane .... LAND AS SOON AS PRACTICAL
8. Reverse Thrust .... DO NOT USE
9. Affected Power Lever .... IDLE
10. Flaps .... LIMIT 20°

    NOTE: See **Landing Planning**, Section PC.

11. GPWS / GND SPLR FLAP ORIDE .... ON

    CAUTION: IN ANY SITUATION WHERE A REVERSER WILL NOT RESTOW, THE AFFECTED ENGINE SHOULD BE SHUT DOWN ONLY IF REQUIRED TO MAINTAIN LEVEL FLIGHT. UNDER CERTAIN GROSS WEIGHT AND ATMOSPHERIC CONDITIONS, A SUCCESSFUL GO-AROUND MAY NOT BE POSSIBLE.

END

Reverse Thrust Unlock Light Illuminated On The Ground

AFM 4-24-40

CAUTION: DO NOT ATTEMPT TO DEPLOY AND RESTOW THE AFFECTED REVERSER. DAMAGE CAN OCCUR TO AN ACTUATOR'S PRIMARY LOCK IF IT IS UNLOCKED WITHOUT MAINTAINING STOW SIDE PRESSURE ABOVE 1200 PSI. THE ACTUATOR COULD BE DAMAGED REQUIRING REPLACEMENT AND/OR LOCK DOWN PROCEDURES MORE RESTRICTIVE THAN THE INITIAL FAILURE WOULD INDICATE.

Return for maintenance action prior to next takeoff.

END

Thrust Reverser Locking Procedure

AFM 3-24-20

NOTE: Use this procedure when a T/R is inadvertently deployed during engine shutdown. If a malfunction is suspected, refer to GIV Maintenance Manual, Chapter 78, for T/R lockdown information.

1. For left T/R unlock, open WARN LTS PWR # 4 CB (P, F-4). For right T/R unlock, open WARN LTS PWR # 8 CB (P, G-3 or G-4). Affected T/R unlock light should extinguish.

   NOTE: If **BOTH** left and right T/R are unlocked, both the WARN LTS PWR # 4 CB and WARN LTS PWR # 8 CB must be opened in order to perform engine cranking cycle.

   CAUTION: OBSERVE STARTER DUTY CYCLE.

   CAUTION: DO NOT ATTEMPT TO START ENGINE IF T/R DOORS ARE NOT ENGAGED BY THE SECONDARY LOCK LATCH. PERFORM NEXT STEP IF T/R DOORS ARE NOT ENGAGED.

2. With reverse thrust lever in stow position, perform **Engine Cranking Cycle**, page NG-3. T/R doors will engage secondary lock latch.

   NOTE: Engine cranking cycle will not lock T/R actuator.

3. With reverse thrust lever in stow position, perform **Starting Engines** checklist, page NC-6.

4. Close circuit breaker(s) after engine reaches idle. T/R unlock and deploy lights should be extinguished.

Continued on next page →

Thrust Reverser Locking Procedure, ctd… AFM 3-24-20

NOTE: As an alternate method to the engine crank cycle, the T/R doors may be brought through secondary lock latch as follows:

1. Remove electrical and hydraulic power from airplane.
2. Cycle all flight controls to remove residual hydraulic pressure from systems.
3. Apply hand pressure to lower door until secondary lock latch engages T/R doors.

END

Engine Synchronizer Failure AFM 3-08-10

Failure of the engine synchronizer will be evident by left engine failing to maintain synchronization with the right on either low pressure or high pressure speed. Should this occur, select the synchronizer OFF. The synchronizer has also failed if, when selecting the system OFF, the operating light fails to extinguish after fifteen (15) seconds. Should this occur, pull the ENG SYNC circuit breaker (P, K-9). If the synchronizer has failed, power lever stagger and asymmetric reverse thrust may be expected but should not present control problems. With the synchronizer in the failed mode, the approach idle system will not limit the engine to minimum approach RPM of 67 % HP RPM. This RPM must be monitored on approach.

On SN 1214 and subsequent and airplanes with drawing 1159SB40761/1159SB40762 incorporated, the engine synchronizer function is controlled by the autothrottle. The engine synchronizer function is only available when the autothrottle is engaged and in the speed control mode, e.g., CRUISE, V/S mode, V PATH mode, or PITCH HOLD mode. The engine synchronizer function is enabled with the autothrottle engaged by using the ON/OFF and LP/HP selector switches on the overhead panel.

END

Approach Idle System Failure AFM 3-08-20

1. Illumination of amber "ENG IDLE" light:

   In Flight:

   A. If flaps are less than 39°, minimum idle for corresponding engine may increase to 67% HP RPM.

   B. If flaps are at 39°, the flight crew must manually maintain minimum engine RPM to 67% HP RPM on approach.

   On Ground:

   A. Minimum idle for the corresponding engine may increase to 67% HP RPM.

2. Approach Idle System Failure - Amber "ENG IDLE" light does not illuminate:

   In Flight:

   A. If flaps are at 39°, the flight crew must manually maintain minimum engine RPM to 67% HP RPM on approach.

END

Engine Vibration AFM 3-08-30

If EVM exceeds 0.60 LP and/or 0.60 HP:

1. Power Lever .... RETARD UNTIL EVM RETURNS TO NORMAL LEVEL

   CAUTION: EVM INDICATIONS ALONE SHOULD NOT BE USED AS CRITERIA FOR ENGINE SHUTDOWN. IN ICING CONDITIONS, VIBRATIONS MAY EXCEED THE ALERT LEVEL WITHOUT OTHER ABNORMAL INDICATIONS AND ARE CONSIDERED NORMAL.

If vibration is accompanied by other failure indication:

2. Affected Engine ....SHUT DOWN

   If in flight, see **Engine Failure / Shutdown In Flight**, page EC-7.

   If on ground, see **Shutdown**, page NF-1.

END

Ice Shedding Procedure

AFM 3-08-40

In Flight:

To assist in shedding ice, if high vibration occurs and operational circumstances permit, one engine at a time may be retarded to idle, held there for five (5) seconds, and then accelerated to 85% LP RPM. The power lever may then be returned to its original position.

On Ground:

When taxiing or holding on the ground at low power in temperatures less than 1°C, engine operation at 85% LP for one (1) minute is recommended just prior to takeoff and at intervals of not more than sixty (60) minutes under these temperature and moisture conditions. This is dependent on taxiway and/or runway conditions and proximity to other airplanes.

END

Engine Failure To Start

AFM 3-11-10

Failure of engine to start or reach idling speed may be caused by:

1. No engine rotation.
2. No fuel or no ignition of fuel.

Failure of the engine to rotate can be the result of electrical or pneumatic malfunctions. Check the engine instruments display for the Start Valve Open (SVO) mnemonic. If not present, see **Start Valve Failure**, page EC-19.

NOTE: *For airplanes SN 1144 and subs. and SN 1000 thru 1143 with ASC 151,* engine failure to start may be the result of a failed igniter. Check EICAS for IGN mnemonic. If not present, the start may be salvaged by selecting Air Start Ignition - ON prior to moving the HP cock from OFF to OPEN. See MEL for dispatch.

NOTE: Check for fuel flow / pressure to engine. If there is no fuel flow / pressure verify FIRE handle is FULLY IN.

Auto ignition should occur when the ENGINE START switch is depressed and its availability will be indicated by the Ignition (IGN) mnemonic on the engine instruments display. If auto ignition is not indicated, check for proper selection of the START switch instead of the CRANK switch. If the CRANK switch has been inadvertently selected, the start may be salvaged by selecting the proper AIR START IGNITION switch to ON; or the start may be terminated, the proper selections made and a second attempt initiated.

Continued on next page →

Engine Failure To Start, ctd… AFM 3-11-10

Fuel ignition should result within five (5) to ten (10) seconds after opening the HP fuel cock.

If there is no indication of ignition:

1. HP Fuel Cock .... SHUT
2. Start Master Switch .... OFF

END

Start Valve Failure AFM 3-11-20

START VALVE FAIL TO OPEN OR INDICATE OPEN ON ENGINE START:

1. Start Attempt.. DISCONTINUE
2. Engine Start Circuit Breaker (P, K-6). .... CHECK
3. APU Air / External Air ....ON / CONNECTED
4. Bleed Air Pressure...............................CHECK (25 PSI MINIMUM)

If air is available and pressure is adequate:

5. Another Start .... ATTEMPT

If start valve does NOT open:

6. Start .... ABANDON
   The start valve can be manually opened and closed through an access port in the engine cowling. See **Engine Start – Manual Operation of Start Valve**, page NG-15 or refer to **GIV Maintenance Manual**, Chapter 80, for procedure.

FAILURE TO CLOSE AFTER ENGINE START:

If the start valve indicator ("SVO") is still illuminated (start valve not closed) by ground idle HP RPM, proceed as follows:

1. Start Master Switch ....PRESS / CHECK LIGHT OUT
2. Both Bleed Air Switches .... OFF
3. APU Air (or External Air) .... OFF

Continued on next page →

Start Valve Failure, ctd… **AFM 3-11-20**

When bleed air pressure stabilizes at minimum value (minimum 30 seconds):

4. Engine .... SHUT DOWN
5. Notify maintenance before further start attempt.

END

Start Valve Open (SVO) Indication - In Flight AFM 3-11-30

In the event the amber SVO indication is displayed on EICAS in flight:

1. Isolation Valve .... CLOSED
2. Affected Engine Bleed Air Switch.. OFF
3. Affected Bleed Air Manifold Pressure .... ZERO (0)
   If not zero, reduce affected engine power to idle.
4. Altitude .... 41,000 FEET OR LESS
5. Engine Parameters and EVM levels .... CHECK

If parameters and levels are normal:

6. Malfunction .... INVESTIGATE AFTER LANDING

   CAUTION: EVM INDICATIONS ALONE SHOULD NOT BE USED AS CRITERIA FOR ENGINE SHUTDOWN. SEE **ENGINE VIBRATION**, PAGE EC-17.

If parameters and levels are abnormal:

7. Engine .... SHUT DOWN
   See **Engine Failure / Shutdown In Flight**, page EC-7.

END

Hot Start

AFM 3-11-40

If engine exceeds maximum start temperature (700°C):

1. HP Fuel Cock (Affected Engine) .... SHUT
2. Affected Engine .... CONTINUE TO MOTOR FOR 30 SECONDS

   Continue to motor the affected engine for a maximum of thirty (30) seconds to reduce TGT.

After a maximum of thirty (30) seconds:

3. START MASTER .... OFF

Prior to the next attempt to start, check that the fuel boost pump is ON, fuel pressure is normal, an air source is available and its pressure is adequate. Check wind direction and attempt to start directly into the wind; move the airplane if required. If a second attempt produces a hot start, shut down the affected engine. DO NOT attempt a restart.

END

Continuous (Airstart) Ignition Limitations

AFM 1-74-10

For airplanes SN 1000 through 1249 without ASC 304:

The duty cycle time for continuous (airstart) ignition without ASC 304 is five (5) minutes ON and thirty (30) minutes OFF for cooling. There is no limitation on the ignition when used in a thirty (30) seconds ON, thirty (30) seconds OFF cycle.

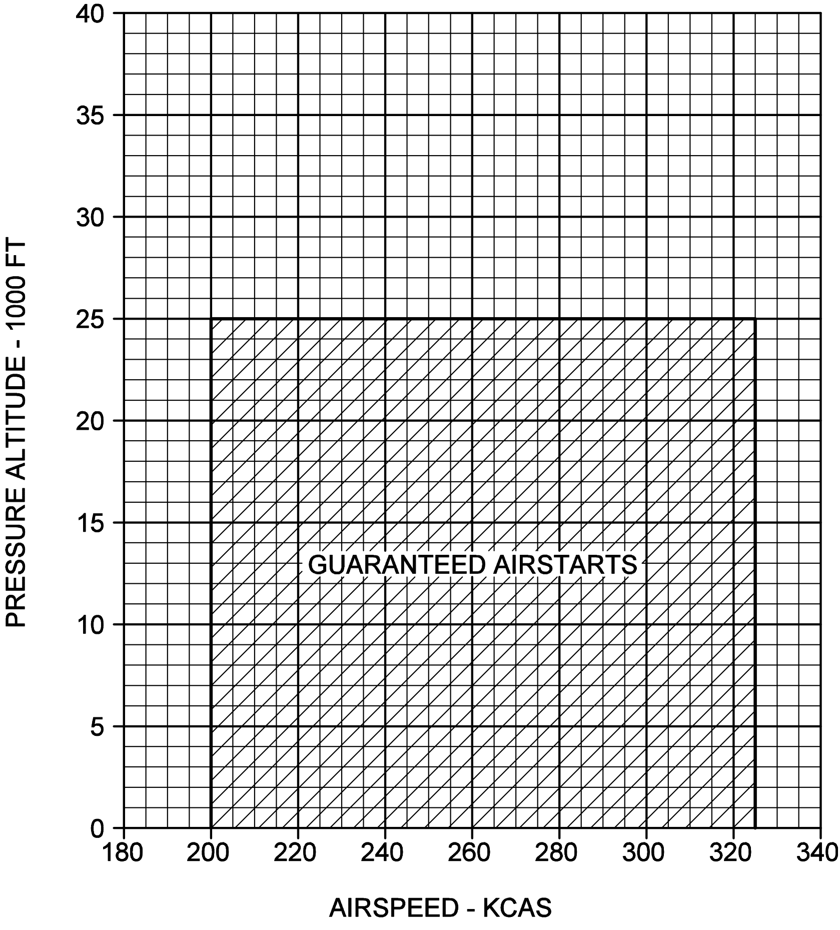
For airplanes SN 1250 and subs and SN 1000 through 1249 with ASC 304:

There is no duty-cycle time-limitation for continuous (airstart) ignition with ASC 304 installed.

END

Airstart Envelope

AFM FIG 1-10



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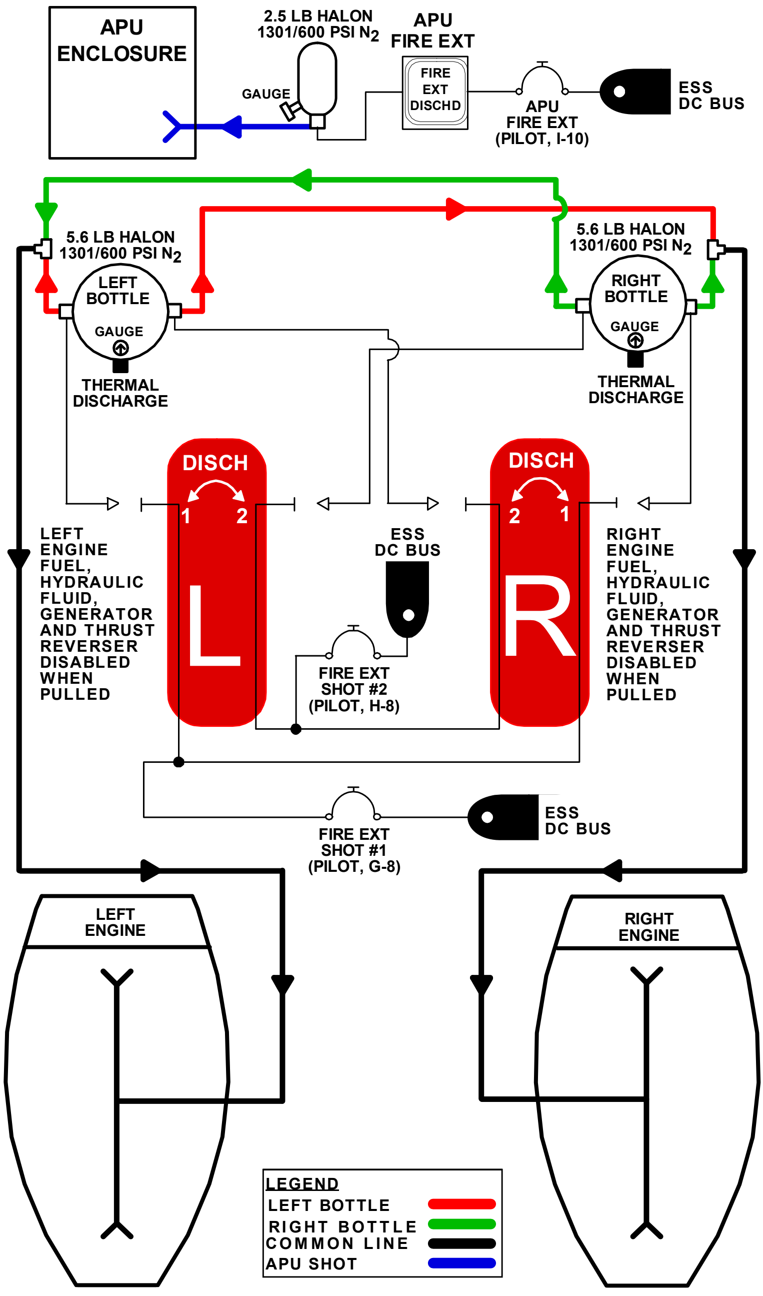
Fire / Overheat / Smoke Index

Related Topics In QRH

Fire Extinguishing System Diagram



Engine Fire In Flight

AFM 4-12-10

For an engine fire warning (red ENG FIRE LOOP ALRT with warning tone, accompanied by FIRE handle red lights ON, and lights in the associated HP fuel cock), proceed as follows:

1. Warning Tone ....SILENCE
2. Affected Engine ....IDENTIFIED
3. Affected Engine's Power Lever ....IDLE
4. Affected Engine's HP FUEL COCK...................................... SHUT
5. Affected Engine's Fire Handle ....PULL
6. Affected Engine's Fire Extinguisher ....
   .... DISCH 1 (TURN TO EXTREME POSITION)

   NOTE: When it is necessary to discharge a fire bottle, ALWAYS use DISCHARGE 1 first.

If fire warning indications are no longer present:

7. Fire Warning Circuit Test...PERFORM

If fire warning circuit test is satisfactory, complete the ENGINE FAILURE / SHUTDOWN IN FLIGHT checklist (page EC-7). If fire warning circuit test is not satisfactory, or if fire warning indications persist for 30 seconds:

8. Affected Engine's Fire Extinguisher ....
   .... DISCH 2 (TURN TO EXTREME POSITION)

If fire warning circuit test is satisfactory or warning ceases after discharge of fire bottle(s):

9. **ENGINE FAILURE / SHUTDOWN IN FLIGHT**
   Checklist (page EC-7) .... COMPLETE

END

Engine Fire On Ground

AFM 4-12-20

1. Airplane ....STOP
2. Both Power Levers .... IDLE
3. Parking Brake .... SET
4. Both HP Fuel Cocks ....SHUT
5. Affected Engine .... IDENTIFIED
6. Affected Engine's FIRE Handle.. PULL

If fire warning indications are no longer present:

7. Fire Warning Circuit Test .... PERFORM

If light(s) test satisfactorily, proceed to Step 11. If fire warning circuit does not test properly, or if fire light remains illuminated for 30 seconds:

8. Affected Engine's Fire Extinguisher ....
   ....DISCH 1 (TURN TO EXTREME POSITION)

If fire warning indications are no longer present:

9. Fire Warning Circuit Test .... PERFORM

If fire warning light(s) extinguish:

9. Fire Warning Circuit .... TEST

If light(s) test is satisfactory, proceed to Step 11. If fire warning circuit does not test properly, or if fire light remains illuminated for thirty (30) seconds:

10. Affected Engine's Fire Extinguisher ....
    ....DISCH 2 (TURN TO EXTREME POSITION)

If fire warning light(s) test is satisfactory, or warning ceases after discharge of fire bottle(s).

11. APU MASTER Switch ....PRESS/LIGHT OUT

After Ten (10) Seconds:

12. Battery 1 and 2 Switches .... OFF
13. Airplane ....EVACUATE

END

APU Fire

AFM 4-12-30

1. APU Overspeed Test Button .... PRESS
2. APU Master Switch.. OFF

   NOTE: After the APU MASTER switch has been turned off, RPM and EGT indication will continue for thirty (30) seconds or until the RPM decreases below 10% *(on airplanes SN 1041 and subs. and airplanes SN 1000 thru 1040 with ASC 46).*

3. APU Fire Extinguisher .... PRESS

   NOTE: Allow one (1) minute after release of extinguisher for warnings to cancel.

4. APU Fire Test .... PRESS

   If the APU fire detection system tests properly, it may be assumed that the APU fire has been extinguished. In flight, an expeditious descent and landing should be considered for assessment of any damage caused by the APU.

   If warnings have not cancelled or system does not test after warnings have cancelled, it must be assumed that the APU fire has NOT been extinguished.

In Flight:

5. Emergency Descent .... AS REQUIRED
6. Nearest Suitable Airport .... LAND

On Ground:

7. Airplane .... STOP / SET PARKING BRAKE
8. Engines... SHUT DOWN
9. Fuel Boost Pumps .... ALL OFF
10. Airplane... EVACUATE IF NECESSARY

END

Airplane Interior Fire / Smoke / Fumes

AFM 4-12-40

WARNING: **DO NOT DELAY DESCENT OR DIVERSION TO FIND THE SMOKE SOURCE. REGARDLESS OF WHETHER A FIRE HAS BEEN EXTINGUISHED OR SMOKE HAS CLEARED, CONSIDERATION SHOULD BE GIVEN TO LANDING THE AIRPLANE AT THE NEAREAST SUITABLE AIRPORT, WITHOUT DELAY.**

WARNING: **CONSIDER ALL SMOKE AND/OR FUMES TO BE TOXIC.**

1. Crew Oxygen Masks (100%) and Smoke Goggles .... DON
2. NO SMOKE / SEAT BELT.. ON

   WARNING: **EXERCISE EXTREME CAUTION WHEN USING OXYGEN NEAR OPEN FLAME.**

3. Passenger Oxygen Mask .... MANUALLY DEPLOY / VERIFY

   NOTE: Visually confirm that an oxygen mask has deployed for each passenger. Advise passengers to DON oxygen masks.

4. Galley / Cabin Master Switches .... OFF
5. Emergency Power .... ON
6. Rapid Descent (if possible) .... BEGIN

   Use of autopilot and autothrottles is recommended. Set altitude pre-selector to desired safe altitude.

   NOTE: See **Emergency Descent Procedure**, page EH-4.

Proceed to the appropriate section to complete checklist:

- **Fire / Smoke / Fumes in Cockpit, Cabin, or Baggage Compartment** (page ED-7).. Section A
- **Smoke From Air Conditioning Outlets** (page ED-8) .... Section B
- **Electrical Fire / Smoke Source Unknown** (page ED-9) ....Section C

Continued on next page →

Section A: Fire / Smoke / Fumes in Cockpit, Cabin, or Baggage Compartment

WARNING: **MOST GAS-TYPE FIRE EXTINGUISHERS USE HALON AS THE EXTINGUISHING AGENT. AFTER THE FIRE IS EXTINGUISHED, REDUCE CONCENTRATION OF HALON AND RESIDUAL FUMES BY ALLOWING ADEQUATELY VENTILATED AIR TO ENTER THE CABIN.**

1. Smoke Mask, Goggles, and Portable Oxygen (Investigating Crew Member) .... DON
2. FLIGHT/LANDING Switch .... FLIGHT

If the source of Fire/Smoke/Fumes is in the baggage compartment, go to Step 4.

3. Fire/Smoke/Fumes .... LOCATE/EXTINGUISH/ELIMNATE

Proceed to Section D: Smoke and Fumes Evacuation, page ED-11.

4. Internal Baggage Door .... OPEN SLIGHTLY

   NOTE: If the airplane is unpressurized, select the pressurization system to MANUAL, and fully close the outflow valve.

5. Baggage Door Seal Depressurization:

   A. Baggage Door Handle............................... OPEN 45 DEGREES (for airplanes s/n 1000 through 1155, without ASC 157)

      NOTE: Crew member is required to enter baggage compartment to accomplish Step 5A. Once door handle is rotated 45 degrees, do not open baggage door. Doing so will impair smoke evacuation.

   B. Baggage Door Seal Selector Valve ....EVAC SMOKE (for airplanes s/n 1000 through 1155, with ASC 157, and airplanes s/n 1156 and subsequent)

      NOTE: As cabin altitude increases, cabin rate of climb can be controlled by increasing available bleed pressure above 35 psi. Bleed pressure can be increased by increasing power to maximum continuous setting, or by selecting COWL ANTI-ICE ON at higher altitudes. If unable to attain 35 psi or greater, or if selecting COWL ANTI-ICE ON results in COOL TUB HOT message, descend to lower altitude until cabin rate of climb is controllable. Select COWL ANTI-ICE OFF if COOL TURB HOT message persists.

6. Baggage Compartment ....ENTER

Continued on next page →

7. Fire/Smoke/Fumes............... LOCATE / EXTINGUISH / ELIMINATE
8. Cabin Pressurization May Be Returned to Normal:
   A. Baggage Door Handle .... CLOSE
   (for airplanes s/n 1000 through 1155, without ASC 157)

   NOTE: Crew member is required to enter baggage compartment to accomplish Step 8.

   B. Baggage Door Seal Selector Valve .... NORMAL OPS
   (for airplanes s/n 1000 through 1155, with ASC 157, and airplanes s/n 1156 and subsequent)
9. Internal Baggage Door...CLOSED
10. **Proceed to nearest suitable airport and land. Proceed to Section D: Smoke and Fumes Evacuation**, **page ED-11**.

Section B: Smoke From Air Conditioning Outlets

To isolate smoke source to an Environmental Control System (ECS) pack or Engine Bleed Air System:

1. Isolation Valve .... CLOSED
2. Left Engine BLEED AIR .... OFF

If smoke appears to have stopped, proceed to nearest suitable airport and land. Proceed to Section D: Smoke and Fumes Evacuation, page ED-11.

If smoke continues:

3. Left Engine BLEED AIR ....ON
4. Right Engine BLEED AIR .... OFF

If smoke appears to have stopped, proceed to nearest suitable airport and land. Proceed to Section D: Smoke and Fumes Evacuation, page ED-11.

If smoke continues:

CAUTION: WITH L AND R BLEEDS OFF, THE AIRPLANE WILL DEPRESSURIZE AND CABIN ALTITUDE WILL RISE RAPIDLY.

5. Left Engine BLEED AIR .... OFF

Continued on next page →

6. RAM AIR .... RAM
7. OUTFLOW VALVE .... OPEN (TO VENT SMOKE)

If source of smoke or fumes cannot be positively located and isolated, even though smoke has dissipated, consider performing the steps in Section A (page ED-7) or Section C (page ED-9). Proceed to nearest suitable airport and land.

Section C: Electrical Fire / Smoke Source Unknown

1. Boost Pumps .... ALL ON
2. Cross Flow .... OPEN
3. Battery Switches .... BOTH ON
4. Essential AC Bus .... E INV (MANUALLY SELECT)
5. Essential DC Bus .... BATT (MANUALLY SELECT)
6. Electric Masters (Left, Right, AUX Power Switches) .... OFF
7. 'E' BATTS .... OFF

If smoke stops, complete steps 8 through 11. Proceed to Section D: Smoke and Fumes Evacuation, page ED-11. If smoke continues, go to step 12.

8. FGC 2 Circuit Breaker .... PULL
9. STBY Electrical Power Switch, E INV, TRU .... ON
10. Symbol Generator 2 and 3 Control Switches .... ALT
    (Top Compact – If Desired)
11. Utility Pump Switch .... OFF
    NOTE: STBY Electrical Power Switch, E INV, TRU should be turned off for approach and landing.

If smoke continues:

12. Electrical Masters (Left, Right, AUX Power) .... ON
13. ESS AC and DC Busses .... AUTO
14. Pressurization Control .... MANUAL

Continued on next page →

Airplane Interior Fire / Smoke / Fumes, ctd… AFM 4-12-40

At Power Distribution Box (PDB):

CAUTION: DO NOT ATTEMPT TO RESET ANY POPPED CIRCUIT BREAKERS.

15. ESS AC and DC Circuit Breakers ....PULL ONE AT A TIME

    Allow sufficient time (approximately thirty (30) seconds) for smoke to stop between each PULL and RESET.

    CAUTION: PULLING ESS DC BUS PILOT CIRCUIT BREAKER 2 WILL DISABLE MANUAL CONTROL OF PRESSURIZATION SYSTEM. RESELECT AUTO MODE IF PULLING THIS CIRCUIT BREAKER STOPS SMOKE.

    NOTE: Refer to MASTER TABLE, Section 4, for Electrical Component Availability, to assist in determining inoperative items with a specific breaker.

16. Yaw Damper and/or Mach Trim Limits...........................OBSERVE
17. Pressurization Control .... AUTO

    If available, pilot's Phase A Circuit Breaker, ESS AC Section.

18. Windshield Heat ....OFF TWO (2) SECONDS, THEN ON
19. FGC CB's .... PULL AND / OR RESET (AS NECESSARY)

If smoke continues:

20. Electrical System...........RETURN TO NORMAL CONFIGURATION
21. Windshield Heat......................OFF TWO (2) SECONDS, THEN ON
22. FGC CB's .... PULL AND / OR RESET (AS NECESSARY)
23. P**roceed to nearest suitable airport for landing. Proceed to Section D: Smoke and Fumes Evacuation, page ED-11.**

Continued on next page →

Section D: Smoke and Fumes Evacuation

WARNING: **MOST GAS-TYPE FIRE EXTINGUISHERS USE HALON AS THE EXTINGUISHING AGENT. AFTER THE FIRE IS EXTINGUISHED, REDUCE CONCENTRATION OF HALON AND RESIDUAL FUMES BY ALLOWING ADEQUATELY VENTILATED AIR TO ENTER THE CABIN.**

To remove residual smoke / fumes from the cockpit or cabin areas:

1. FLIGHT / LANDING Switch .... FLIGHT
2. Cockpit and Cabin Air Gaspers .... OPEN
3. Cabin Altitude ....RAISE TO 10,000 FT
4. Cabin Rate... Select 1,000 FPM

If smoke/fumes cannot be eliminated, consider repeating Section A, B, or C of this procedure.

5. Emergency Power (E-Batts)... ARM
6. Proceed to nearest suitable airport and land.

Operational Considerations:

- Immediate Return for Landing – see **Immediate Return for Landing**, page EI-6
- Overweight Landing – see **Overweight Landing**, page EI-3
- Ditching – see **Ditching**, page EI-4
- Emergency Airplane Evacuation – see **Planned Airplane Evacuation**, page S-42

END

Engine Fire Warning System Malfunction AFM 4-13-10

In the event of a single FIRE TEST LOOP light:

1. Lighted Fire Test Switchlight .... PRESS

If warnings illuminate:

A. Fire Test Switch ....RELEASE

B. Faulty Loop With Fault Switch On FIRE DETECTION Panel .... DISABLE

If warnings DO NOT illuminate:

A. Fire Test Switch ....RELEASE

B. **Engine Fire In Flight** Checklist, page ED-3 or
Engine Fire On Ground Checklist, page ED-4
(As Applicable) ....COMPLETE

END

Tailpipe Fire AFM 4-12-50

In the event of a tailpipe fire:

1. Affected Engine .... IDENTIFIED
2. Both Power Levers .... IDLE
3. Affected Engine HP Fuel Cock .... OFF
4. APU BLEED AIR (If APU Running) .... ON
5. Isolation Valve .... OPEN
6. Master Crank .... ON
7. Affected Engine ENG START .... ON
8. SVO .... CHECK
9. Crank Cycle .... CONTINUE UNTIL FIRE IS OUT
10. Emergency Crew .... NOTIFIED
11. Remaining Engine .... SHUT DOWN

END

Fire Detection System Fault AFM 3-13-20

Each of the two (Loop A and Loop B) fire detection loops of each engine is provided with a fault discriminator circuit. Fault indicators and a single test button to test all four loops are located in the ENGINE CONTROL section of the overhead panel.

If a fire detection loop develops a fault, the associated amber fault light will illuminate and an **ENG FLT LOOP ALRT** message with the associated tone will be generated. Since both loops must sense a fire or overheat in order to trigger an engine fire warning, the faulty loop will preclude that capability until it has been isolated from the system. The faulty loop is isolated and fire detection system is restored to normal operation by pressing the amber FAULT switchlight, at which time the OFF portion of the switchlight will illuminate.

END

Engine Hot

AFM 4-21-10

For engine hot (L-R ENGINE HOT message on CAS and associated warning tone), proceed as follows:

1. Affected Engine Bleed Air .... OFF
2. Affected Power Lever ....RETARD

If engine hot message is extinguished, continue operating with reduced engine power.

If light persists, immediately proceed as follows:

3. Affected Engine HP Fuel Cock...SHUT

   NOTE: If HP fuel cock lever is jammed and cannot be closed, pull FIRE handle.

4. Power and Trim .... AS REQUIRED
5. Gear and Flaps .... AS REQUIRED
6. **Engine Failure / Shutdown In Flight** Checklist (Page EC-7) ....COMPLETE

   CAUTION: FIRE EXTINGUISHER SHOULD NOT BE USED FOR ENGINE HOT WARNING ALONE. IF SUBSEQUENT FIRE WARNING RESULTS, INITIATE ENGINE FIRE PROCEDURE. AN ENGINE MUST NOT BE RESTARTED AFTER AN OVERHEAT WARNING. CLOSELY OBSERVE APPROPRIATE ENGINE FIRE WARNING LIGHT.

   NOTE: If HP fuel cock was closed, but visual, aural, or TGT / RPM checks indicate a condition that could lead to further damage, the FIRE handle should be pulled.

END

Pylon Hot

AFM 4-21-20

A PYLON HOT message indicates a pylon temperature which may result in damage to the pylon. Accomplish the following checklist:

1. Affected Engine Bleed Air .... OFF
2. Affected Engine ECS Pack .... OFF
3. Isolation Valve ....CHECK CLOSED
4. Altitude................................DESCEND TO 41,000 FT OR BELOW

Continued on next page →

Pylon Hot, ctd… **AFM 4-21-20**

If message persists or returns:

5. Affected Engine ....SHUT DOWN
   See **Engine Failure / Shutdown In Flight**, page EC-7.

END

Aft Equipment Hot

AFM 4-21-30

The **AFT EQUIPMENT HOT** message indicates high temperatures exist in the tail compartment which may be caused by a ruptured pneumatic duct or fire.

1. Affected Engine ....ATTEMPT TO IDENTIFY

   NOTE: High TGT, high fuel flow, low EPR, or abnormal (low) bleed pressure may indicate faulty side.

2. Affected Engine Bleed Air ....OFF
3. Isolation Valve ....CHECK CLOSED
4. Altitude............................... DESCEND TO 41,000 FT OR BELOW

If message persists or returns:

5. Emergency Descent ....COMMENCE
   See **Emergency Descent Procedure**, page EH-4.
6. Crew Oxygen Masks .... DON (IF REQUIRED)
7. Passenger Oxygen Masks ....DEPLOY (IF REQUIRED)
8. Opposite Engine Bleed Air ....OFF

   NOTE: This will result in loss of cabin pressurization. Cabin altitude will climb at the cabin leak rate.

9. If message persists, land airplane as soon as possible.

END

Converter Overheat

AFM 4-21-40

Illumination of "L or R CONV HOT" amber caution message with associated tone:

1. ELECTRIC MASTER LEFT or RIGHT POWER .... OFF

If message extinguishes:

2. ELECTRIC MASTER LEFT or RIGHT POWER .... ON

   NOTE: Converter operation should be monitored for remainder of flight. At any sign of unusual operation or heavy load, turn ELECTRIC MASTER LEFT or RIGHT PWR - OFF.

   NOTE: The light will remain ON until the temperature of the converter is reduced. If overheat condition recurs, turn the overheated converter OFF for remainder of flight and perform **Alternator / Converter Failure – Single**, page EA-8.

   NOTE: If below 15,000 ft., it is recommended that the APU be started as a source of supplemental electrical power. **See the Avionics / Electrics / APU Index, page EA-1, for the appropriate APU Inflight Operation procedure.**

END

Alternator Overheat

AFM 4-21-50

Illumination of L or R ALT HOT message with associated tone:

1. ELECTRIC MASTER LEFT or RIGHT POWER .... OFF

If the message extinguishes and was not accompanied by engine vibration or unusual EVM indications:

2. ELECTRIC MASTER LEFT or RIGHT POWER .... ON

   Monitor alternator operation for remainder of flight. If indications are erratic or HOT message re-illuminates, select appropriate ELECTRIC MASTER switch to OFF.

   NOTE: If below 15,000 ft., it is recommended that the APU be started as a source of supplemental electrical power. **See the Avionics / Electrics / APU Index, page EA-1, for the appropriate APU Inflight Operation - Alternate Electrical Source procedure.**

END

Under Floor Overheat

AFM 3-21-60

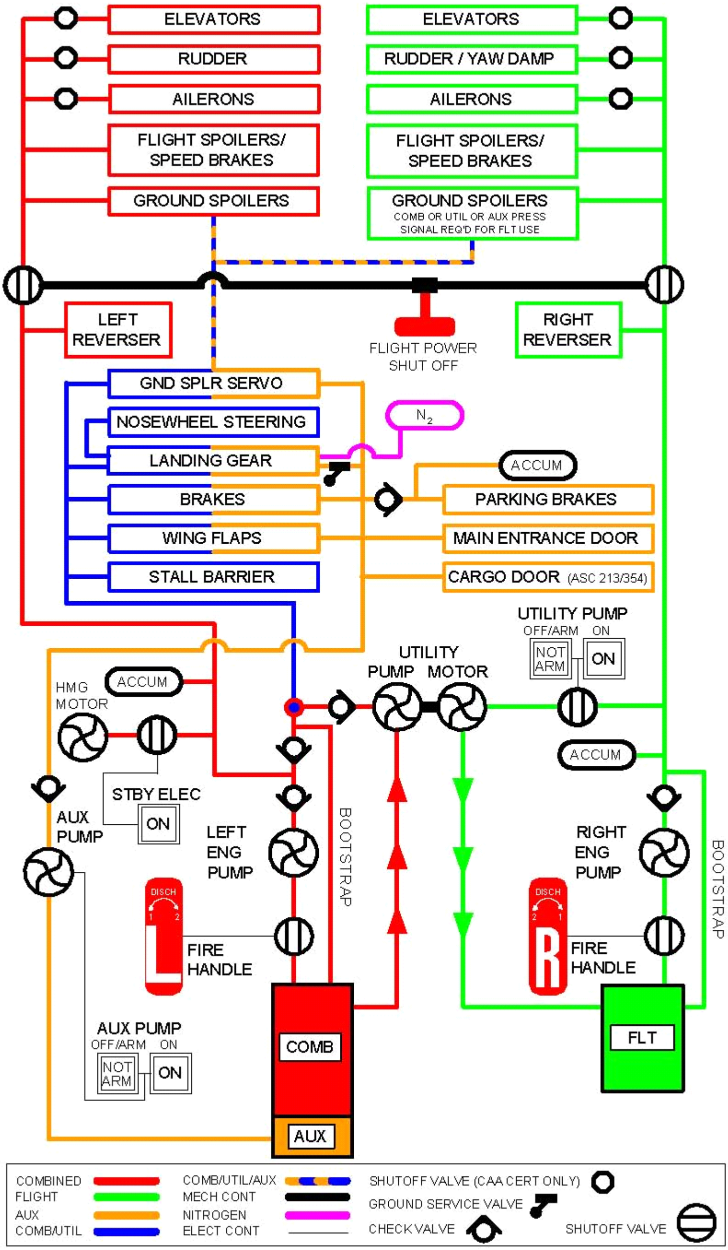
1. If wing anti-ice is ON, select left wing OFF.
2. Wait two (2) minutes.
3. If message persists, select right wing OFF.
4. If message persists, depart icing conditions.
5. Verify isolation valve is closed.
6. Select left bleed OFF.
7. If message persists, select left bleed ON and right bleed OFF.
8. If message persists, check floor board physically for temperature.
9. If cool, no action.
10. If hot, descend to 15,000 ft. or below and select left bleed OFF and RAM AIR ON.

END

Notes

Flight Controls / Autoflight Index

Hydraulic System Diagram



General Guidance

AFM 4-15-10

CAUTION: DO NOT PULL THE FLIGHT POWER SHUTOFF HANDLE WITH THE SPEED BRAKES EXTENDED, AS ASYMMETRICAL SPOILER BLOWDOWN MAY CAUSE AIRPLANE ROLL. SHOULD THE FLIGHT POWER SHUTOFF HANDLE INADVERTENTLY BE PULLED WITH SPEED BRAKES EXTENDED, IMMEDIATELY MOVE THE SPEED BRAKE HANDLE TO THE FULL RETRACTED POSITION.

END

Flight Control Runaway To Hardover Position

AFM 4-15-20

Rudder Control (Yaw):

1. Flight Power Shutoff Handle.. PULL

Aileron Control (Roll):

2. Check **GND SPOILER** message. If extinguished:
   Flight Power Shutoff Handle.. PULL

Elevator Control (Pitch):

3. Verify runaway electric trim or stall barrier is not the problem, then:
   Flight Power Shutoff Handle.. PULL

END

Immovable Flight Controls
AFM 4-15-30

Rudder Control (Yaw):

1. Flight Power Shutoff Handle .... DO NOT PULL UNLESS COUPLED WITH SINGLE-ENGINE EMERGENCY

Aileron Control (Roll):

2. Flight Power Shutoff Handle .... PULL

Elevator Control (Pitch):

3. Flight Power Shutoff Handle .... PULL

   NOTE: Use only lateral and longitudinal trim after pulling Flight Power Shutoff Handle. Disengage yaw damper. Return directional trim to the neutral position prior to restoring hydraulic boost to flight control. If control is not regained in manual mode, return hydraulic boost to flight controls.

   NOTE: If yaw damper disengages as result of pulling Flight Power Shutoff Handle, do not attempt to re-engage it until hydraulic pressure has been restored to flight controls.

END

Stall Barrier Malfunction
AFM 4-15-40

In the event of unwanted stall barrier actuation:

1. Autopilot Disengage Button............................ PRESS AND HOLD
2. Stall Barrier Switch .... OFF
3. Autopilot Disengage Button...RELEASE
4. Determine failed stall barrier system and disable by pulling the appropriate STALL WARN CMPTR circuit breaker (#1: CPO, A-11; #2: CPO, B-11.)
5. Stall Barrier Switch....................... ON (PROCEED WITH FLIGHT)

END

Ground Spoiler Failure

AFM 4-15-50

IN FLIGHT:

If the GND SPOILER message illuminates:

1. Ground Spoiler Arming Switch .... OFF
2. GND SPOILER Circuit Breaker (CPO, C-6)........................... PULL

DURING LANDING:

If NO GND SPOILER light illuminates (remains ON) after landing touchdown (GND SPOILERS ARMED):

1. Speed Brakes .... DEPLOY IMMEDIATELY

   NOTE: ACFT CONFIGURATION message may illuminate and warning tone may sound momentarily.

   NOTE: NO GND SPOILER light may light momentarily after touchdown, and then go out again, in less than one (1) second. This is the normal sequence of events as the ground spoilers go through their automatic deployment process. Wheel spin up logic should preclude this occurrence. If light remains ON after touchdown, the above procedure applies.

END

Runaway Electric Pitch Trim

AFM 3-15-60

In the event of runaway electric pitch trim:

1. Autopilot Disconnect Button .... PRESS AND HOLD

If electric trim is disabled while switch is held:

2. Electric Pitch Trim...DISENGAGE
3. Autopilot Disconnect Button .... RELEASE
4. Manual Pitch Trim Wheel ....USE TO RETRIM

   NOTE: Subsequent attempts to engage the autopilot will result in automatic re-engagement of electric trim.

Alternate Procedure:

1. Manual Pitch Trim Wheel ....GRASP AND HOLD
2. Electric Pitch Trim...DISENGAGE

   NOTE: Subsequent attempts to engage the autopilot will result in automatic re-engagement of electric trim.

END

Frozen Pitch Trim

AFM 3-15-70

NOTE: If either or both FGCs have “hard failed” due to frozen trim, pull and reset both FGC CBs (FGC #1: CPO, A-7; FGC #2: CPO, B-7).

If frozen pitch trim is suspected:

1. Autopilot Disconnect Button .... PRESS AND HOLD
2. Electric Pitch Trim .... DISENGAGE
3. Attempt to free trim with firm application of fore and aft pressures on the pitch trim wheel.

   CAUTION: DO NOT USE EXCESSIVE FORCE AS THE PITCH TRIM SYSTEM IS PROTECTED BY A SHEAR PIN DESIGNED TO BREAK IF EXCESSIVE FORCE IS APPLIED. IF THE PIN IS SHEARED, FUTURE USE OF PITCH TRIM WILL NOT BE POSSIBLE.

If the pitch trim cannot be freed and descent to warmer altitude is not feasible:

4. Maintain current trimmed airspeed while in cruise flight. If climbs or descents are necessary, disconnect autopilot and manually fly the airplane to new altitude. Determine trim airspeed for new altitude, adjust power as required. Engage autopilot if desired.
5. If possible, descend to warmer altitude before attempting any configuration changes.

When below 20,000 ft. MSL:

6. Attempt to free trim using electric pitch trim switches. If unable, turn pitch trim OFF and re-attempt to free trim using firm pressure on pitch trim wheel.

   If trim cannot be freed, plan to approach and land with current trim setting. Normal cruise trim is approximately zero (0) units while approach trim is typically 12 to 14 units nose up. Yoke pull force is not excessive with pitch trim at zero (0) and the airplane in landing configuration. Speed and configuration should be adjusted to give the best balance of approach speed and control forces for airport and weather conditions.

   CAUTION: CARE SHOULD BE TAKEN WHEN CHANGING CONFIGURATION TO AVOID RAPID CONTROL FORCE BUILD-UP.

END

Failure of Stabilizer / Flap Interconnect AFM 3-14-10

1. Further Flap Movement .... STOP
2. Land as soon as practicable; if further flight is necessary, match flaps to stabilizer position and observe appropriate placard speed.
3. GPWS / GND SPLR FLAP ORIDE...ON
4. For Landing:

STABILIZER FAILED AT 20° or 39° POSITION:

Match flaps to stabilizer position. If appropriate, see **Partial or Jammed Flaps Landings**, page EE-9. If runway length is limited and the stabilizer is in 20° position, then 39° flaps may be used for landing. In that condition, use full nose up elevator trim as required and expect heavy pull forces on final approach and during landing.

STABILIZER FAILED AT 0° or 10° POSITION

Match flaps to stabilizer position. See **Partial or Jammed Flaps Landings**, page EE-9. If runway length is limited, 20° flaps may be used for landing. In that condition, use full nose up elevator trim as required and expect heavy pull forces on final approach and during landing.

END

Flaps - Alternate Operation

AFM 3-14-20

CAUTION: IF OPERATING (COMBINED OR UTILITY) HYDRAULIC PRESSURE READS ZERO IMMEDIATELY AFTER SELECTING FLAPS, PULL BOTH THE FLAP CONT (CPO, B-1) AND THE MANUAL FLAP CONT (CPO, A-1) CIRCUIT BREAKERS BEFORE TURNING ON AUXILIARY HYDRAULIC PUMP. THIS WILL ENSURE THAT AUXILIARY SYSTEM FLUID WILL BE AVAILABLE FOR BRAKING AFTER LANDING.

NOTE: When using the emergency flap control, the AOA indication on the PFDs will be invalid (Red X). The stall barrier system (shake and push) will continue to function normally (two systems). When 39° flaps is selected, the "STALL BARR 1 FL" message will be displayed on CAS. Pull the STALL WARN CMPTR CB (CPO, A-11). The stall barrier system will be single system operation with the operative stall warning computer providing normal shake and push functions.

To use the Emergency Flap Control, proceed as follows:

1. Flap Lever .... AS REQUIRED
2. Auxiliary Hydraulic Pump .... ON (IF REQUIRED)

   NOTE: Do NOT engage autopilot when using emergency flaps unless flap deflection is 10° or greater.

3. Emergency Flap Switch .... EMERG

   NOTE: Activating the Emergency Flap switch will cause a FLAP INPUT INVALID message on the FMS CDU, the speed target will become invalid, VREF will no longer be displayed on the display controller or PFD speed tape and the autothrottle will disengage.

4. Emergency Flap Control ....
   .... PUSH OR PULL (EXTEND OR RETRACT)

When flaps attain desired position:

5. Emergency Flap Control ....NEUTRAL

   CAUTION: IN ORDER TO GUARD AGAINST THE REMOTE POSSIBILITY OF ASYMMETRY PROTECTION FAILURE WHEN USING EMERGENCY FLAP CONTROL, OBSERVE THAT NO AIRPLANE ROLL IS PRESENT INDICATING FLAP ASYMMETRY. IF ASYMMETRY IS INDICATED, RETURN FLAPS TO THEIR PREVIOUSLY SELECTED POSITION.

END

Partial Or Jammed Flaps Landings

AFM 3-14-30

If landing at a reduced flap setting is unavoidable, plan a wide approach, select Airstart Ignition ON, and select the longest available runway.

Once established:

1. VREF.................................APPROPRIATE TO CONFIGURATION

   Observe VREF speed appropriate to configuration as shown in Performance Section for landing distance.

2. GPWS/GND SPLR FLAP ORIDE..ON

   NOTE: Set FLAP ORIDE switch to prevent nuisance message.

   Landing with less than full flaps negates ground spoiler deployment as result of wheel spin-up unless the GPWS / GND SPLR FLAP ORIDE switch is selected ON before landing. Ground spoiler deployment as result of weight-on-wheels should be normal.

3. Touchdown Ground Speed .... 182 KNOTS MAXIMUM

   CAUTION: TIRE SPEED LIMITATIONS WILL BE EXCEEDED IF TOUCHDOWN IS MADE IN EXCESS OF 182 KNOTS GROUND SPEED. *(195 KNOTS GROUND SPEED SN 1214 AND SUBS., AND SN 1000 THRU 1213 WITH ASC 190.)*

   NOTE: If landing at less than 39° flaps, See Performance for landing distances.

END

Uncommanded Flap Movement

AFM 3-14-40

In the event of uncontrolled flap movement:

1. Emergency Flap Switch..EMERG

2. Emergency Flap Control.. ....PUSH OR PULL (EXTEND OR RETRACT)

3. MANUAL FLAP CONT Circuit Breaker (CPO, A-1) .... PULL

   NOTE: With MANUAL FLAP CONT circuit breaker pulled, flaps are inoperative. Emergency flap control may be regained by resetting MANUAL FLAP CONT circuit breaker and operating the Emergency Flap Control.

END

Flaps Lock Up While Moving / Fail To Move AFM 3-14-50

In the event that flaps stop moving while in motion or flaps fail to move when commanded, proceed as follows:

1. Speed ....REDUCE AT LEAST 10 KNOTS FROM SPEED AT TIME OF LOCKUP; MAINTAIN AT LEAST 10 KNOTS BELOW VFE FOR SELECTED / DESIRED FLAP SETTING
2. Flaps.. SELECT BACK TO PREVIOUS SETTING (REVERSE DIRECTION)
3. Normal Flap Operation .... RESUME ONCE FLAPS REACH SELECTED SETTING
4. Flap Limit Speed (VFE)..OBSERVE

If flaps fail to respond:

5. Partial Flaps Landing .... PERFORM

   See **Partial or Jammed Flaps Landings**, page EE-9.

END

Autopilot Malfunction AFM 3-03-10

If the autopilot malfunctions, disengage autopilot as follows:

1. Autopilot Disengage Button (Either Pilot's Control Wheel)............. .... PRESS (MOMENTARILY)

The autopilot may also be disengaged by any of the following:

2. Autopilot "ON" Capsule (Guidance Panel).......................... PRESS
3. Electric Elevator Trim Switch ....ACTUATE
4. Either Go-Around (G/A) Button .... PRESS

   CAUTION: THE AUTOTHROTTLE, IF ENGAGED WHEN THE G/A BUTTON IS PRESSED, WILL INCREASE POWER TO G/A EPR.

   If a flight guidance computer fails, the second computer will continue to control airplane. A failure of the second computer will disconnect the autopilot.

   In the event that above methods fail, the autopilot may be overpowered by the pilot.

END

Autothrottle Malfunction AFM 3-03-20

Disengage the autothrottle as follows:

1. Activating either momentary action engage/disengage thumb lever located on the power levers.
2. Activating either mechanical disengagement button located on the front of the power lever knobs.
3. Deselecting the autothrottle ARM button on the guidance panel.

END

AFGCS Failure AFM 3-03-30

Fail Operational: If monitors detect a failure condition within a flight guidance computer, the failed computer will be shut down and control of the airplane will be transferred to the remaining computer.

Fail Passive: If the airplane is being controlled by the second flight guidance computer, after a single failure, and that computer fails, the autopilot will disengage.

END

Mach Trim Compensation Failure AFM 3-03-40

1. Pitch Trim Switch ....DISENGAGE

   NOTE: Since electric elevator trim is not available, the manual trim wheel must be used.

2. MMO ....LIMIT TO 0.75 MT

   CAUTION: WHEN OBSERVING MMO OF 0.75 MT, CLOSELY MONITOR AIRSPEED TO AVOID EXCEEDING 0.75 MT.

END

Yaw Damper Failure

AFM 3-03-50

The yaw damper is powered by the flight hydraulic system. If the right engine has failed but is windmilling, flight system hydraulic pressure will remain at approximately 3000 psi and will power the yaw damper. Should the right engine failure prevent windmilling, the yaw damper should be selected OFF. The YAW DAMPER OFF message illuminates if the yaw damper is OFF.

If the yaw damper fails in flight:

With the yaw damper inoperative, maintain at least 220 KCAS above 18,000 ft.

Below 18,000 ft., maintain airspeed, as function of fuel quantity, at or above that shown in the following table until ready to configure the airplane for approach and landing.

Fuel Quantity - 1000 lb	8	10	12	14	16	18	20	22	24	26	28	30
Min. Airspeed - KCAS	96	107	117	126	135	143	151	158	165	172	178	184

When yaw damper failure is coupled with failure of mach trim compensation, observe speed limitations for both failures and limit altitude to 41,000 ft.

NOTE: If practical, land at fuel weight of less than 9,000 lb (4,082 kg). Landing at lower fuel weights will improve dutch roll stability. Avoid flight into known areas of moderate or greater turbulence.

If the yaw damper fails on the ground:

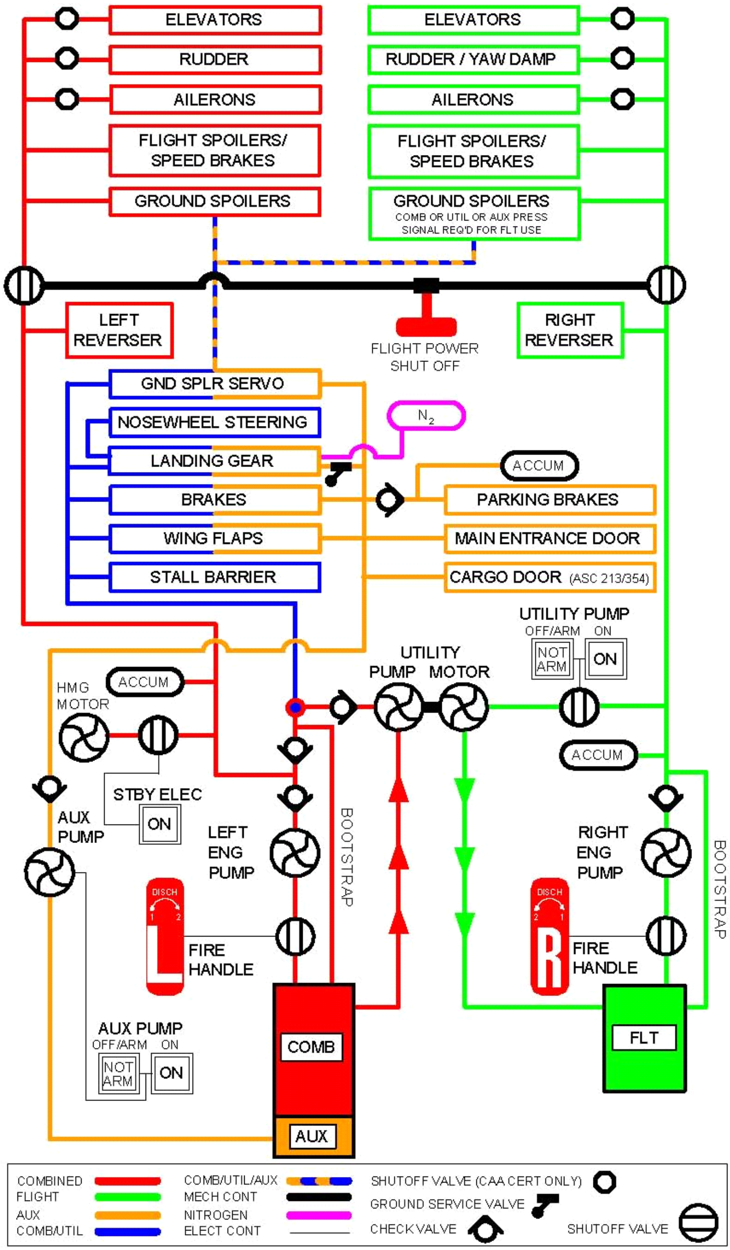
If the yaw damper fails on the ground, maximum fuel quantity permitted for takeoff is 9,000 lb (4,082 kg).

END

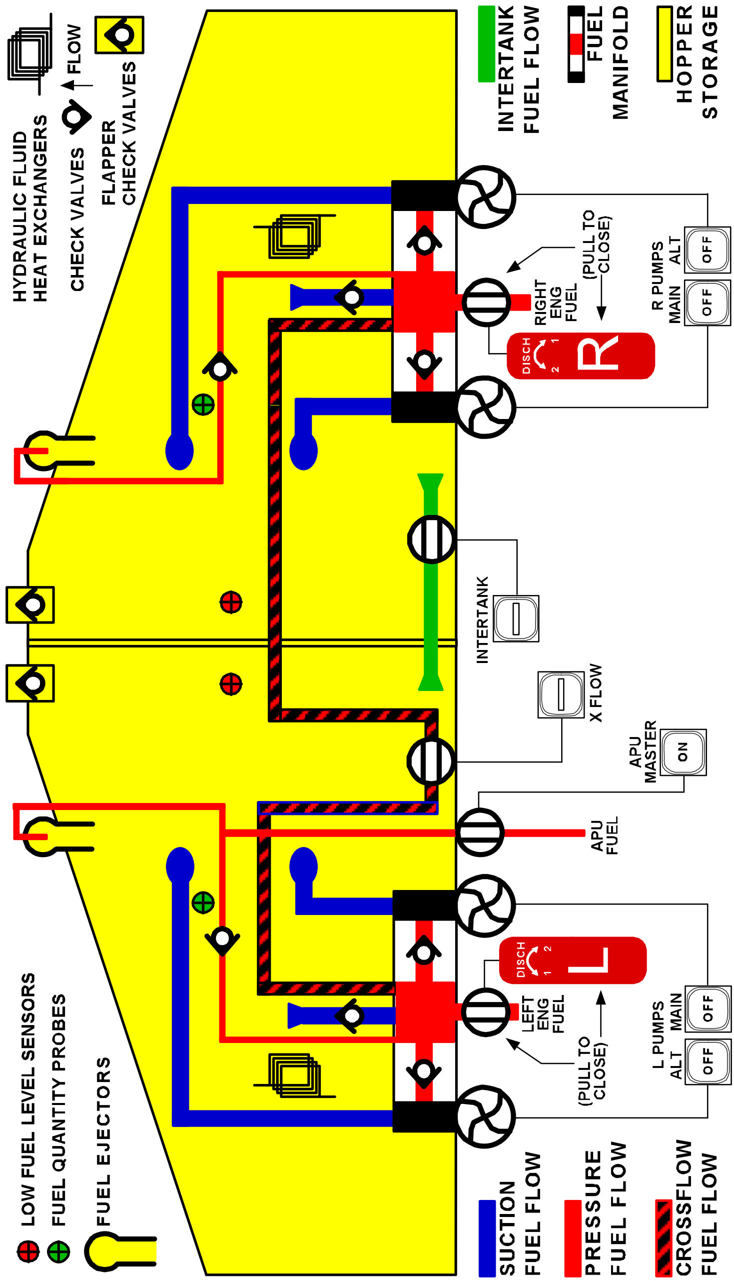
Fuel / Hydraulics Index

Related Topics In QRH

Hydraulic System Diagram



Fuel System Diagram



Dual Hydraulic System Failure AFM 4-17-10

Continue flight to nearest suitable airport and land.

1. Altitude .... ESTABLISH 25,000 FT OR BELOW
2. Airspeed .... MAINTAIN 250 KCAS OR SLOWER
3. Yaw Damper.. OFF

   NOTE: This action disengages the autopilot if previously engaged.

For approach and landing, plan a wide, power-on approach. Once established:

4. AUX Pump... ON
5. Flaps... 20°
6. Airstart Ignition .... ON
7. Landing Gear Handle .... DOWN
8. Airspeed ....MAINTAIN 175 KCAS MAXIMUM
9. EMER Landing Gear T-Handle .... PULL

   CAUTION: DO NOT RESET EMER GEAR HANDLE OR DUMP VALVE FOR REMAINDER OF FLIGHT.

10. Landing Gear... DOWN / 3 GREEN
11. Flaps Position... VERIFY 20°
12. VREF .... APPROPRIATE TO CONFIGURATION
13. GPWS / GND SPLR FLAP ORIDE .... ON

    Select the ORIDE switch to ON if landing with flaps less than 22 degrees. This prevents the nuisance “TOO LOW FLAPS” aural alerts and provides backup capability to deploy the ground spoilers with wheel spin-up.

    NOTE: During approach and landing, the GROUND SPOILER message may be displayed on the CAS during flap extension. This is due to spoiler float and is considered normal.

Continued on next page →

Dual Hydraulic System Failure, ctd… AFM 4-17-10

Prior To Touchdown:

CAUTION: ENSURE THAT THE FLAPS HAVE REACHED THE 20° POSITION PRIOR TO TOUCHDOWN. IF FLAPS ARE STILL IN TRANSIT, DELAY THE LANDING UNTIL THE FLAP MOVEMENT HAS STOPPED. IF UNABLE TO DELAY THE LANDING, PULL THE MANUAL FLAP CONT CIRCUIT BREAKER (CPO, A-1) TO STOP FLAP MOVEMENT. LANDING WITH THE FLAPS IN MOTION DRIVEN BY THE AUXILIARY HYDRAULIC PUMP WILL CAUSE A LOSS OF BRAKES DURING THE LANDING ROLLOUT.

Landing:

NOTE: Thrust reversers and ground spoilers will be inoperative after touchdown.

14. Brakes and Rudder .... MAINTAIN DIRECTIONAL CONTROL

    With both hydraulic systems failed, braking pressure will be supplied by the AUX hydraulic system. If AUX hydraulic system pressure is lost, the PARK / EMERG brake must be used. Antiskid will be inoperative when using the PARK / EMERG brake. See **Anti-Skid Off Braking (HMAB)**, page EB-8 and **Emergency Brakes (HMAB)**, page EB-3.

15. Landing Gear Safety Pins.. INSTALL

    CAUTION: GEAR PINS SHALL BE INSTALLED PRIOR TO RESETTING DUMP-VALVE.

END

Combined Hydraulic System and Auxiliary Hydraulic System Loss of Fluid

AFM 4-17-70

Continue flight to the nearest suitable airport and land.

CAUTION: TO VERIFY THE AVAILABILITY OF THE AUXILIARY SYSTEM FLUID, SELECT THE AUX PUMP ON FOR A MINIMUM OF 30 SECONDS AND CHECK FOR AUXILIARY SYSTEM PRESSURE. IF PRESSURE CAN BE MAINTAINED, ASSUME THAT THE AUXILIARY SYSTEM IS AVAILABLE AND PROCEED TO **Combined Hydraulic System Failure – Loss of Pressure and Fluid**, PAGE EF-8.

CAUTION: STALL BARRIER PROTECTION IS NOT AVAILABLE WITH LOSS OF COMBINED HYDRAULIC SYSTEM FLUID.

In case of complete fluid loss to the Combined Hydraulic System and the Auxiliary Hydraulic System, proceed as follows:

1. Utility Pump .... NOT ARM
2. AUX PUMP .... CHECK OFF

Approach:

Select a runway that is at least 7000 feet long and 150 feet wide. Minimize crosswind component to less than 5 knots if possible. If crosswind is present, plan the landing on the downwind side, as the airplane will weather vane into the wind as rudder effectiveness is lost. Plan a shallow approach to land within the first 1000 feet of the runway.

3. GPWS / GND SPLR FLAP ORIDE .... ON / AS REQUIRED

   Select the ORIDE switch to ON if landing with flaps less than 22 degrees. This prevents the nuisance “TOO LOW FLAPS” aural alerts.
4. NWS POWER .... OFF
5. Airspeed .... 175 KCAS OR LESS
6. Landing Gear Handle .... DOWN
7. Emergency Landing Gear Handle .... PULL
8. Landing Gear Position .... DOWN / 3 GREEN
9. Anti-Skid .... OFF
10. Ground Spoiler .... OFF

Continued on next page →

Combined Hydraulic System and Auxiliary Hydraulic System Loss of Fluid, ctd…... AFM 4-17-70

11. Brakes System Page (SPZ 8400) .... SELECT
12. VREF.............................. APPROPRIATE FOR CONFIGURATION

    Observe VREF speed appropriate to configuration as shown in GIV AFM Section 5.11 **Final Approach and Landing: Approach Speed For Landing Distance (VREF).**

Landing:

After landing, deploy the right thrust reverser as required to slow the airplane, maintaining aerodynamic directional control with the rudder. Aerodynamic control will not be available below 60 knots and will begin diminishing around 80 knots. Depending on winds, runway crown, etc, the airplane may veer as rudder effectiveness is lost. The right thrust reverser may mitigate a veer to the left. A slight thrust increase on the right engine (forward thrust) may mitigate a veer to the right but **with a corresponding increase in landing roll**. In either case, cautious application of reverse or forward thrust (if required) should only be considered if a runway departure is likely.

13. Speed Brakes .... EXTENDED
14. Right Thrust Reverser ....DEPLOY / AS REQUIRED

    CAUTION: IT IS NORMAL FOR DECELERATION TO INCREASE AS THE STOP PROGRESSES. THIS MAY RESULT IN LOCKED WHEELS AND BLOWN TIRES. REDUCE PRESSURE AS REQUIRED TO MAINTAIN CONSTANT DECELERATION. THERE WILL BE A SIGNIFICANT INCREASE IN LANDING DISTANCE WITH ANTI-SKID INOPERATIVE.

15. Park / Emergency Brake...AS REQUIRED TO MAINTAIN 400 PSI

    Slowly apply Park / Emergency Brake, increasing pressure to 400 PSI. However, it may be necessary to exceed this pressure in order to stop the airplane on the runway. The pilot should devote his attention to airplane control and brake application, while the copilot should monitor applied brake pressure, advising the pilot of corrections required to maintain optimum brake pressure.

After Landing:

16. Landing Gear Safety Pins... INSTALL

    CAUTION: GEAR PINS SHALL BE INSTALLED PRIOR TO RESETTING DUMP VALVE.

END

Combined Hydraulic System Failure – Loss of Pressure and Fluid

AFM 3-17-30

Continue flight to the nearest suitable airport and land.

CAUTION: TO VERIFY THE AVAILABILITY OF THE AUXILIARY SYSTEM FLUID, SELECT THE AUX PUMP ON FOR A MINIMUM OF 30 SECONDS AND CHECK FOR AUXILIARY SYSTEM PRESSURE. IF PRESSURE CANNOT BE MAINTAINED, ASSUME THAT THE AUXILIARY SYSTEM IS NOT AVAILABLE AND PROCEED TO **Combined Hydraulic System and Auxiliary Hydraulic System Loss of Fluid**, PAGE EF-6.

CAUTION: STALL BARRIER PROTECTION IS NOT AVAILABLE WITH LOSS OF COMBINED HYDRAULIC SYSTEM FLUID.

1. Hydraulic Synoptic / Quantity........................... DISPLAY / CHECK
2. Utility Pump .... NOT ARM

If a hydraulic leak in the flaps system is not suspected, proceed to Step 4. Otherwise, disable flaps by performing Step 3:

3. Manual Flap Control CB (CPO A-1)...................................... PULL
4. AUX PUMP Switch..................... SELECT ON FOR 30 SECONDS

   The only way to verify availability of Auxiliary System fluid is to select the AUX pump on and observe that pressure can be maintained.

If loss of Combined System fluid and Auxiliary System fluid is suspected or has occurred, see **Combined Hydraulic System and Auxiliary Hydraulic System Loss of Fluid, page EF-6.**

For approach and landing:

5. AUX Pump...ON
6. Flap Handle (If CBs Not Pulled In Step 3) ....20°

   20° flaps should be planned for approach and landing.

   NOTE: Flap extension from UP (0°) to 20° will take at least one (1) minute.

7. Airstart Ignition ....ON
8. Landing Gear Handle ....DOWN
9. Airspeed ....175 KCAS OR LESS
10. EMER Landing Gear Handle.. PULL

    CAUTION: DO NOT RESET EITHER THE EMER GEAR HANDLE OR DUMP VALVE PRIOR TO LANDING.

Continued on next page →

Combined Hydraulic System Failure – Loss of Pressure and Fluid, ctd… AFM 3-17-30

11. Landing Gear .... DOWN / 3 GREEN
12. Flap Position (If Available) .... VERIFY 20°
13. VREF .... APPROPRIATE TO CONFIGURATION

    Plan a wide approach and observe VREF speed appropriate to configuration as shown in GIV AFM Section 5.11 **Final Approach and Landing: Approach Speed For Landing Distance (VREF).**

Prior to touchdown:

CAUTION: ENSURE THAT THE FLAPS HAVE REACHED THE 20° POSITION PRIOR TO TOUCHDOWN. IF FLAPS ARE STILL IN TRANSIT, DELAY THE LANDING UNTIL THE FLAP MOVEMENT HAS STOPPED. IF UNABLE TO DELAY THE LANDING, PULL THE MANUAL FLAP CONT CIRCUIT BREAKER TO STOP FLAP MOVEMENT. LANDING WITH THE FLAPS IN MOTION DRIVEN BY THE AUXILIARY HYDRAULIC PUMP WILL CAUSE A LOSS OF BRAKES DURING THE LANDING ROLLOUT.

14. GPWS/GND SPLR FLAP ORIDE .... ON

    Select the ORIDE switch to ON if landing with flaps less than 22 degrees. This prevents the nuisance “TOO LOW FLAPS” aural alerts and provides backup capability to deploy the ground spoilers with wheel spin-up.

15. Nutcracker .... Test
16. Ground Spoilers .... ARMED

    CAUTION: TIRE SPEED LIMITATIONS WILL BE EXCEEDED IF TOUCHDOWN IS MADE IN EXCESS OF 182 KNOTS (SN 1000-1213 W/O ASC 190) OR 195 KNOTS GROUND SPEED.

Landing:

17. Brakes / Rudder ....
    .... AS REQUIRED TO MAINTAIN DIRECTIONAL CONTROL
18. Right Thrust Reverser .... AS REQUIRED

    NOTE: The left thrust reverser will not deploy.

19. Landing Gear Safety Pins .... INSTALL

    CAUTION: GEAR PINS SHALL BE INSTALLED PRIOR TO RESETTING DUMP VALVE.

END

Combined Hydraulic System Failure – Loss of Pressure Only

AFM 3-17-40

Continue flight to the nearest suitable airport and land.

1. Hydraulic Synoptic / Quantity .... DISPLAY / CHECK
2. UTILITY HYD PUMP Switch ....NOT ARM

For approach and landing:

3. UTILITY HYD PUMP Switch .... ON

   NOTE: For gear and flap operation after takeoff or during approach, operate one system at a time allowing completion of cycle before operating system, for example:

   - Raise gear first, then retract flaps after gear is up after takeoff.
   - Allow flaps to reach 20° before lowering gear for approach and landing.

4. Aux Hydraulic Pump .... ON
5. Flaps .... 20°
6. Landing Gear.. DOWN / 3 GREEN
7. Flaps .... 39°
8. Ground Spoiler .... ARMED

Landing

9. Brakes / Steering ....AS REQUIRED TO MAINTAIN DIRECTIONAL CONTROL
10. Right Thrust Reverser .... AS REQUIRED

   NOTE: The left thrust reverser will not deploy.

END

Flight Hydraulic System Failure – Loss of Pressure and / or Fluid

AFM 3-17-50

Continue flight to the nearest suitable airport and land.

With a loss of Flight Hydraulic System fluid, the right engine shut down, the right engine FIRE handle pulled or right (flight) hydraulic pump failed, there is little degradation of performance. The only component not available is the right thrust reverser.

In the event of flight system failure:

1. YAW DAMPER .... OFF

   NOTE: This action disengages the autopilot if previously engaged.

2. UTILITY HYD PUMP Switch.. NOT ARM

For approach and landing:

3. AUX PUMP.. ON

   NOTE: For gear and flap operation after takeoff or during approach, operate one system at a time allowing completion of cycle before operating system, for example:

   - Raise gear first, then retract flaps after gear is up after takeoff.
   - Allow flaps to reach 20° before lowering gear for approach and landing.

4. Approach and Landing ....ALLOW FLAPS TO REACH 20° BEFORE SELECTING LANDING GEAR DOWN

5. Landing Gear...DOWN / 3 GREEN

6. Flaps ....39°

7. Ground Spoilers.. ARMED

Landing:

8. Brakes / Steering ....AS REQUIRED TO MAINTAIN DIRECTIONAL CONTROL

9. Left Thrust Reverser... AS REQUIRED

   NOTE: The right thrust reverser will not deploy.

END

Landing With Standby Electrical Power System Operating

AFM 3-17-60

NOTE: If standby electrical power is interrupted during the following steps, cycle the STANDBY ELECTRICAL POWER switch OFF, then ON.

1. Landing Gear.. DOWN
2. Flaps...SET FOR LANDING
3. Emergency Batteries.. ON
4. Ground Spoilers .... OFF
5. HP RPM ....MAINTAIN 67% HP RPM UNTIL TOUCHDOWN

   NOTE: Once the airplane is on the ground, there is no need to continue to maintain 67% HP RPM. The standby electrical system should stay on line during normal taxi maneuvers. If standby electrical power is interrupted, cycle the STANDBY ELECTRICAL POWER switch OFF, then ON to regain power.
6. DO NOT use reverse thrust.
7. On touchdown, manually deploy the flight spoilers at a slow rate (approximately 5 seconds).
8. Use normal braking to stop the airplane.

END

Master Table Of Hydraulic Component Availability GAC

System/Component:	Hydraulic System:			
	COMB	FLT	UTIL	AUX
Elevators	X	X		
Stall Barrier	X		X	
Ailerons	X	X		
Speed Brakes	X	X		
Flight Spoilers	X	X		
Ground Spoilers	X	X[1]		
Rudder	X	X		
Yaw Damper		X		
Left Thrust Reverser	X			
Right Thrust Reverser		X		
Utility Pump Motor		X		
Wing Flaps	X		X	X
Landing Gear & Doors	X		X	X[2]
Nosewheel Steering	X		X	
Brakes	X		X	X
SEP System Motor	X			
Parking Brake Pressure				X
Main Entrance Door				X

[1] If servo pressure signal from COMB, UTIL or AUX is present.

[2] Ground use only, using ground service valve.

Fuel Leak In Flight

AFM 4-16-10

A suspected fuel leak will most likely manifest itself as an increasing difference in fuel quantity that cannot be explained by normal differences in fuel flows between engines. It can also be identified by fuel smell in the cabin, abnormally high fuel flow or fuel flow out of range "dashed" indications on one of the engines, or lateral trim changes.

CAUTION: DO NOT PERFORM THIS PROCEDURE ON THE BASIS OF ERRATIC FUEL GAUGE INDICATIONS ONLY OR DURING ASYMMETRIC TRIM REQUIREMENTS FELT DURING ACCELERATING PHASES OF FLIGHT SUCH AS INITIAL CLIMB OR NOSE HIGH OR NOSE LOW PITCH ATTITUDES.

1. Fuel Crossflow Valve ....CLOSED
2. Fuel Intertank Valve ....CLOSED
3. FMS Single Engine Performance / Range ....CHECK

Monitor fuel tank quantities and lateral trim requirements. Identify leak by observing one wing fuel tank quantity decreasing faster than the other, and or slowly increasing lateral trim force.

If fuel leakage is visible from wing tank, proceed to Step 15.

If fuel leakage is not visible from wing tank, it must be determined if the fuel leak is coming from the wing tank or from the engine/ engine feed system. Descend to 15,000 feet and proceed as follows:

WARNING: **THIS PROCEDURE MAY RESULT IN ENGINE FAILURE. TERRAIN CLEARANCE AND AIRCRAFT SINGLE ENGINE PERFORMANCE MUST BE TAKEN INTO CONSIDERATION.**

Prepare airplane for possible engine failure but DO NOT SHUT DOWN THE ENGINE. See Engine Failure / Shutdown In Flight, page EC-7.

4. Non-Affected Side's Power Lever .... SET AS REQUIRED
5. Steady Flight .... ESTABLISHED
6. Affected Side's Power Lever .... IDLE

   NOTE: The APU is fed by the boost pump manifold on the left wing tank only. If boost pumps on left side are turned off, APU performance may be erratic, and or not meet maximum altitude starting performance.

Continued on next page →

7. Affected Side's MAIN and ALT Boost Pumps .... OFF

Wait two minutes. If the engine continues to run, the leak should be assumed to be in the affected side wing fuel tank. Proceed to Step 15. If the engine fails, runs erratically, or continues to run with extremely high fuel flow or "dashed" fuel flow indications, the leak should be assumed to be in the fuel feed system, somewhere between the boost pumps and the engine. Proceed to Step 6.

8. Affected Engine's HP FUEL COCK .... SHUT
9. Affected Engine's FIRE Handle (Do Not Rotate) .... PULL
10. **Engine Failure / Shutdown In Flight Checklist** (Steps 5 and Subsequent – see page EC-7) .... COMPLETE

    WARNING: **DO NOT RESTART FAILED ENGINE, AS A HIGH PROBABILITY OF ENGINE FIRE EXISTS.**

11. Failed Side's MAIN and ALT Boost Pumps....... RECONFIRM OFF
12. Fuel Crossflow Valve .... RECONFIRM CLOSED
13. Fuel Intertank Valve .... AS REQUIRED
    Balance fuel by using the intertank valve and establishing a small sideslip (approximately ½ trapezoid or ball width). Move the rudder trim arrow in the direction of the tank from which you desire to transfer fuel. This will create a slight wing-down condition toward the tank to which you desire to transfer fuel.
14. Nearest Suitable Airport .... LAND
    See **One (1) Engine Inoperative Landing Procedure**, page EC-12, if required.

Fuel Tank Leak:

15. Affected Side's MAIN and ALT Boost Pumps .... ON
    The flight crew must now evaluate the fuel loss rate and distance to nearest suitable landing airfield. Consideration should be given but is not limited to the following: two-engine vs. single-engine climb to altitude in order to achieve greater range, maximum transfer of fuel to good tank vs. lateral controllability, and affected side engine failure due to fuel starvation.

    NOTE: Up to 4000 lb. of fuel imbalance between tanks in flight has been safely demonstrated while under abnormal conditions. For approach and landing with abnormal fuel imbalance and an engine shut down, be prepared to use full rudder and aileron as necessary.

Continued on next page →

Fuel Leak In Flight, ctd… AFM 4-16-10

16. Fuel Crossflow Valve .... AS REQUIRED
17. Intertank Valve .... AS REQUIRED

    WARNING: **IF INTERTANK VALVE IS USED FOR MAXIMUM FUEL TRANSFER RATES, ENSURE PROPER SIDESLIP IS MAIN-TAINED TO PREVENT FUEL FROM FLOWING BACK INTO LEAKING TANK.**

18. Fuel Transfer to Good Side.....................INITIATE AS REQUIRED
19. Autopilot .... DISCONNECT
20. Airspeed ..... AS REQUIRED TO MAINTAIN LATERAL CONTROL

    CAUTION: IF IT BECOMES APPARENT THAT, PRIOR TO LANDING, ENGINE ON LEAKING SIDE WILL FAIL DUE TO FUEL STARVATION, SHUT DOWN ENGINE (SEE **Engine Failure / Shutdown In Flight**, PAGE EC-7). OBSERVE AFM MAXIMUM FUEL IMBALANCE LIMITS PRIOR TO LANDING (SEE **Permissible Fuel Imbalance For All Flight Operations**, PAGE EF-19).

21. Nearest Suitable Airport...LAND

    See **One (1) Engine Inoperative Landing Procedure,** page EC-12, if required.

    WARNING: **DO NOT USE THRUST REVERSERS ON LANDING.**

END

Fuel Boost Pump Failure

AFM 3-16-20

NOTE: Check position of circuit breakers on POP.

For a L (or R) ALT FUEL FAIL, or L (or R) MAIN FUEL FAIL message on CAS:

1. Same Side Operative Fuel Boost Pump ....ON
2. Check fuel boost pump switch for "CB" indication.
3. If "CB" indication is not illuminated:
   A. Fuel Boost Pump Switch .... OFF
   B. Fuel BOOST PUMP Circuit Breaker (PDB)....................... PULL
4. If "CB" indication is illuminated:
   A. Fuel Boost Pump Switch .... OFF
   B. Fuel BOOST PUMP Circuit Breaker (PDB).................... RESET

   CAUTION: RESET CB ONLY IF USE OF PUMP IN QUESTION IS REQUIRED FOR CONTINUED SAFE FLIGHT AND LANDING.
5. If "CB" indication clears, continue normal operation and monitor CAS. If the message repeats, switch inoperative fuel boost pump OFF and verify that circuit breaker is open.

END

Failure Of Two Boost Pumps On One Side AFM 3-16-30

If two (2) fuel boost pumps on same side are inoperative, fuel can be delivered under pressure to each engine as follows:

1. Crossflow.. OPEN
2. Operative Fuel Boost Pumps ....ALL ON

   CAUTION: FLYING UNDER THESE CONDITIONS WILL PRODUCE A GRADUALLY INCREASING FUEL UNBALANCE, AS FUEL FROM ONLY ONE TANK WILL BE USED.

   CAUTION: THE ENGINE WILL RUN ON SUCTION FUEL FEED ONLY AT OR BELOW 20,000 FEET. ABOVE 20,000 FEET, THE ENGINE WILL RUN ERRATICALLY AND FLAME OUT IF THE CROSSFLOW IS NOT OPEN WITH AT LEAST ONE BOOST PUMP ON.

When fuel balancing is required:

3. Inter Tank .... OPEN
4. Sideslip.....TRIM RUDDER TO ESTABLISH LIGHT WING DOWN

When fuel balancing is complete:

5. Inter Tank ....CLOSED
6. Normal Trim .... RE-ESTABLISHED

   NOTE: For additional information on fuel balancing, refer to **GIV AFM Section 1-28-10**: **Usable Fuel Capacities**. For quick reference purposes, data from this AFM section has been added to **Permissible Fuel Imbalance For All Flight Operations**, page EF-19.

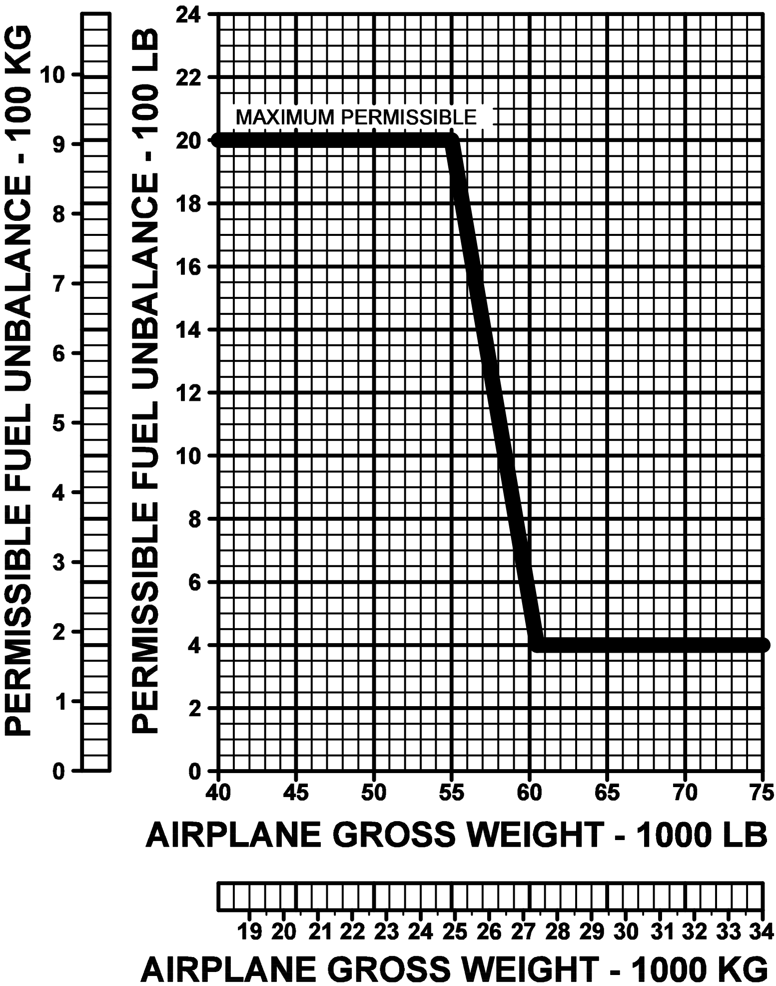
END

Permissible Fuel Imbalance For All Flight Operations

AFM 1-28-10

From GIV AFM Limitations, Section 1-28-10: Usable Fuel Capacities:

See the figure below for maximum unbalanced fuel. Before the imbalance exceeds that shown, proceed with fuel balancing.



Permissible Fuel Imbalance For All Flight Operations, ctd…

AFM 1-28-10

Continued from GIV AFM Limitations, Section 1-28-10: Usable Fuel Capacities:

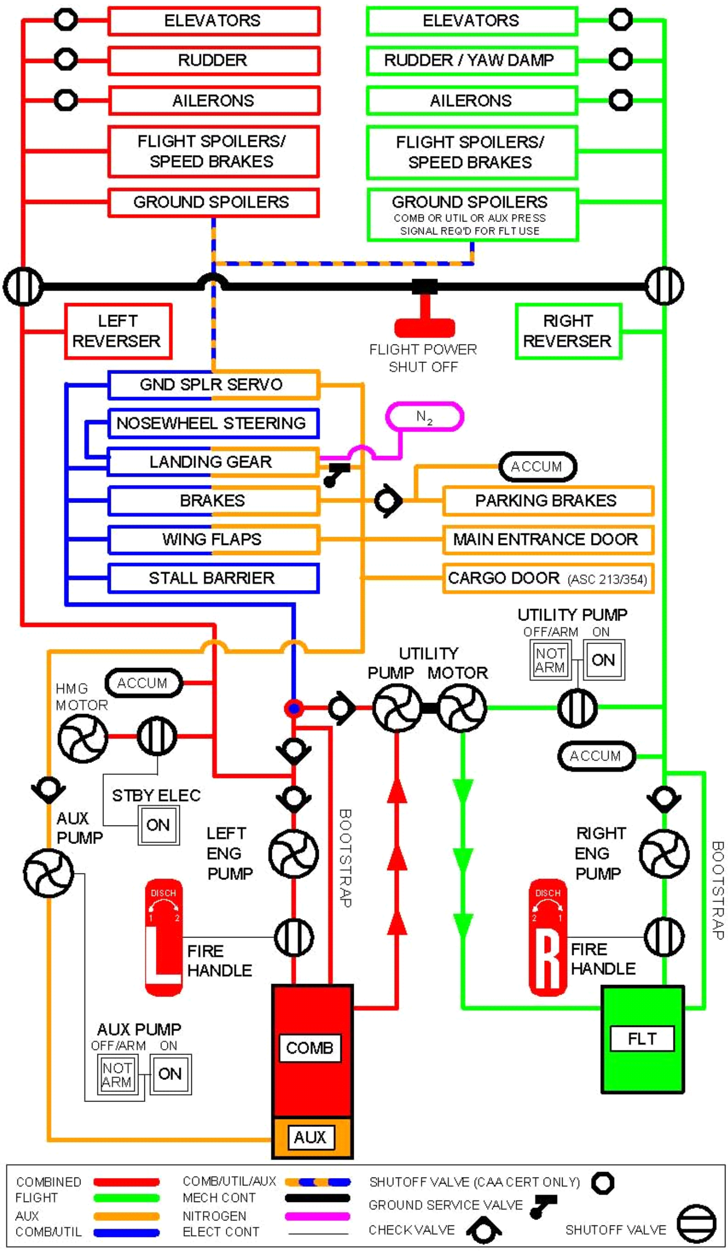
1. Fuel load balancing may be accomplished by using the crossflow valve or intertank valve.
2. When balancing fuel through use of the crossflow valve, ensure that boosted fuel pressure is always available to the engines.

   CAUTION: THE ENGINE WILL RUN ON SUCTION FUEL FEED ONLY AT OR BELOW 20,000 FEET. ABOVE 20,000 FEET, THE ENGINE WILL RUN ERRATICALLY AND FLAME OUT IF THE CROSSFLOW IS NOT OPEN WITH AT LEAST ONE BOOST PUMP ON.
3. Balancing fuel by using the intertank valve requires the airplane to be placed in a sideslip condition. Adjusting the rudder trim in the direction of the "heavy" tank will create a wing down condition and allow fuel to flow toward the "light" tank.

END

Landing Gear Index

Hydraulic System Diagram



Abnormal Gear Condition - Emergency Landing

AFM 4-19-10

NOSE GEAR RETRACTED BOTH MAIN GEAR DOWN AND LOCKED PROCEDURE:

If contamination of the uplocks due to ice and snow is suspected, consider flying to an area where melting can occur. If fully retracted, attempt to release from uplocks by applying positive “g” loading (not to exceed 2.5 g’s flaps up). If partially extended but not locked down, perform a normal approach and firmly “bump” the main wheels on runway in an attempt to shake the nose gear down and locked. Execute a go-around. Consideration should be given to flying faster than normal in order to increase elevator effectiveness and the nose falling through on touchdown.

Landing Procedure:

1. GPWS / GND SPLR FLAP ORIDE..ON
2. Touchdown .... RUNWAY CENTERLINE
3. Wheel Brakes .... USE MINIMUM
4. Nose ....FLY ONTO RUNWAY
   Relieve weight with elevator after runway contact.
5. Brakes ....AS REQUIRED FOR DIRECTIONAL CONTROL AND STOPPING

ONE MAIN GEAR AND NOSE GEAR DOWN AND LOCKED, OPPOSITE MAIN GEAR RETRACTED PROCEDURE:

If fully retracted, attempt to release from uplocks by applying positive “g” loading not to exceed 2.5 g’s flaps up.

If partially extended, yaw airplane to apply spanwise air load to force the affected gear outboard (left rudder for left main gear, right rudder for right main gear). Attempt to lock unsafe gear down. At normal approach speeds, touch affected gear on runway with slight SKID to force the faulty gear outboard. Execute a go-around.

Landing Procedure:

1. GPWS Voice Override...ON
2. Touchdown.......................SIDE OF RUNWAY WITH SAFE GEAR
3. Speed Brakes...................................EXTEND (AS NECESSARY)

Continued on next page →

Abnormal Gear Condition – Emergency Landing, ctd… AFM 4-19-10

4. Thrust Reversers..........USE MAXIMUM INITIALLY, GRADUALLY DECREASING ON FAILED GEAR SIDE FOR DIRECTIONAL CONTROL
5. Brakes .... AS NECESSARY FOR DIRECTIONAL CONTROL AND STOPPING
6. Unsafe Gear .... RELIEVE WEIGHT WITH AILERONS AND THRUST REVERSERS

ONE MAIN GEAR ONLY DOWN AND LOCKED PROCEDURE:

If only one main gear is extended, retract gear and perform an all-gear-up landing. Follow steps below for all-gear-up landing.

BOTH MAIN GEAR RETRACTED NOSE GEAR DOWN AND LOCKED PROCEDURE:

If unable to extend and lock down both main gear, retract nose and perform all-gear-up landing. Follow steps below for all-gear-up landing.

ALL-GEAR-UP LANDING PROCEDURE:

NOTE: Do not deploy spoilers for this procedure.

1. Burn off fuel to 2000 pounds remaining before attempting a planned wheels-up landing.
2. GPWS Voice Override ....ON
3. **FOR SPZ 8400 EQUIPPED AIRPLANES**: Silence landing gear warning horn by pulling FWC #1 circuit breaker. **FOR SPZ 8000 EQUIPPED AIRPLANES**: Silence landing gear warning horn by pulling TONE WARN #1 circuit breaker.
4. For final approach, set flaps to 39°.
5. Use final approach speed of VREF or as slow as possible at all planned wheels up landing weights and fly a very shallow approach angle.
6. Set elevator trim to develop maximum nose up moment. A slight control column push may be required to maintain proper pitch attitude.
7. Target low sink rate at touchdown.
8. Flap segments are likely to break clean away from the wing at touchdown.

Continued on next page →

Abnormal Gear Condition – Emergency Landing, ctd… .AFM 4-19-10

9. Touch down on runway centerline.
10. When aft fuselage contacts runway surface, immediately shut down both engines with FIRE handles.
11. APU MASTER .... OFF
12. BATTERIES .... OFF
13. Pull control column to the full aft position during the remainder of the ground run to maintain a nose-high attitude. Maintain directional control with rudder.
14. When airplane stops, evacuate immediately.

END

Landing Gear Failure To Retract AFM 3-19-20

If landing gear handle will not move:

1. Ground Spoiler .... OFF
2. Lock Release Button .... PUSH

If landing gear handle moves but landing gear fails to retract:

3. Ground Spoiler .... OFF
4. COMBINED SYS Quantity / Pressure .... Check

If either COMBINED SYS quantity or pressure is not indicated, see **Combined Hydraulic System Failure – Loss of Pressure and Fluid**, page EF-8.

CAUTION: USE OF THE LANDING GEAR EMERGY RESET (D-RING) IN AN ATTEMPT TO RETRACT THE GEAR IS NOT RECOMMENDED.

If landing gear still fails to retract:

5. Landing Gear Handle .... DOWN

   NOTE: Should landing gear fail to retract and all attempts are unsuccessful, the landing gear handle should be returned to the DOWN position, and the airplane should return for landing and troubleshooting.

END

Landing Gear Failure To Extend

AFM 3-19-30

If normal operation of the landing gear does not result in a proper down-and-locked condition, alternate extension will be required. A loss of the Combined Hydraulic System (COMB SYS) fluid will also require alternate extension since the utility System will be inoperative, and step 2 and 3 may be omitted.

Landing gear extension is accomplished as follows:

1. Landing Gear Handle .... DOWN
2. Emergency Landing Gear T-Handle ....PUSH (DOWN, TO ASSURE FULLY SEATED)

Wait a minimum of thirty (30) seconds after reseating the T-handle. After 30 seconds:

3. Dump Valve D-Ring.. PULL

   NOTE: Handle must be pulled up fully, held for ten (10) seconds, and then restowed.

If this procedure does not result in proper gear position and indication, proceed as follows:

CAUTION: A FULLY CHARGED NITROGEN BOTTLE (3000 PSI AT 70°F/21°C) WILL ALLOW ONLY ONE (1) EXTENSION OF LANDING GEAR.

4. Airspeed .... 175 KCAS (OR LESS)
5. Emergency Landing Gear T-Handle .... PULL

   NOTE: Ensure landing gear handle is DOWN for proper gear position indication and nose wheel steering operation. Operation of emergency system is not predicated on position of the selector handle.

6. With Landing Gear Down and Locked .... OBSERVE LANDING GEAR EXTENDED SPEED LIMITATION (250 KCAS/0.7 MT)

END

Landing Gear Retraction Following Alternate Extension

AFM 3-19-40

WARNING: **A FULLY CHARGED NITROGEN BOTTLE (3000 PSI AT 70° F (21° C) ALLOWS ONLY ONE EXTENSION OF THE LANDING GEAR. RETRACTION FOLLOWING ALTERNATE EXTENSION COULD RESULT IN A GEAR UP LANDING.**

CAUTION: THIS RESET / RETRACTION PROCEDURE IS PROVIDED FOR USE IF GREATER OR COMPOUNDED EMERGENCY CONDITIONS EXIST AND IS NOT TO BE CONSIDERED AUTHORIZATION TO RECYCLE LANDING GEAR AFTER ROUTINE MAINTENANCE OR TRAINING USE OF THE BLOW DOWN SYSTEM.

Extension of the landing gear using the preceding procedures actuates valves to isolate the hydraulic system from the nitrogen pressure of the emergency extension system. Should conditions necessitate landing gear retraction, the system must be reset to the normal configuration. Retraction will not be possible if Combined System fluid was lost.

To retract the landing gear following an alternate extension, proceed as follows:

1. Landing Gear Handle ....DOWN
2. Emergency Landing Gear T-Handle....................... PUSH (DOWN)

Wait a minimum of thirty (30) seconds after reseating T-handle to allow pressure to bleed off. After 30 seconds:

3. Dump Valve D-ring .... PULL

   NOTE: Handle must be pulled fully, held for ten (10) seconds, and then restowed.

4. Landing Gear Handle .... UP

   NOTE: There is no back-up method for retracting landing gear.

END

Nose Wheel Steering Failure AFM 3-19-50

If the STEER BY WIRE FAIL message illuminates on CAS, proceed as follows:

For airplanes SN 1000 thru SN 1143 without ASC 176:

1. Nose Wheel Steering Switch.................................OFF, THEN ON
2. If Message Stays On: Nose Wheel Steering Switch................OFF
3. Use brakes, rudder, and/or Differential Power for Directional Control.

   NOTE: Normal shimmy damping will be available with nose wheel steering OFF.

IF AIRBORNE:

For airplanes SN 1144 and subs. or airplanes with ASC 176:

NOTE: Message will only illuminate with landing gear extended.

After Takeoff:

1. Nose Wheel Steering Switch...OFF

   If the nose steering wheel is NOT centered, leave landing gear DOWN and land as soon as practical.

   If the nose steering wheel is centered, remove feet from rudder pedal(s) and hands-off nose steering wheel.
2. Landing Gear...RETRACT

On Approach:

1. Nose Wheel Steering Switch...OFF

After Landing:

1. Rudder and Differential Brakes..............USE FOR DIRECTIONAL CONTROL UNTIL REACHING A SLOW TAXI SPEED OR STOPPED
2. Nose Wheel Steering Switch..ON

   A. If message extinguishes, expect normal nose wheel steering output.

   B. If message remains ON, use brakes, rudder, and / or differential power for directional control.

END

Nutcracker System Fails To Shift To Ground Mode At Touchdown

AFM 3-19-60

For airplanes with ASC 166:

1. REV UNLOCK message will illuminate with the use of thrust reversers. Thrust reversers will stow at low ground speed.
2. Ground spoilers will deploy with wheel spin-up, but will retract at low ground speed.
3. Anti-skid system may not operate normally. Be prepared to turn anti-skid off at low ground speed if you lose brakes.
4. Engine idle will go to 67% HP at low ground speed.
5. APU air is inoperative.
6. Pressurization outflow valve will not open automatically. Switch to manual and open outflow valve.
7. Stick shaker and pusher remain armed.
8. Landing gear handle is not safe (safety solenoid energized).
9. Engines cannot be restarted.

For airplanes without ASC 166:

1. Thrust reversers are inoperative.
2. If speed brakes are used, a ACFT CONFIG message will illuminate.
3. Ground spoilers will deploy with wheel spin-up, but will stow at low ground speed.
4. Anti-skid system may not operate normally. Be prepared to turn anti-skid off at low ground speed if brakes are lost.
5. Engine idle will go to 67% HP on landing.
6. Pressurization outflow valve will not open automatically. Switch to manual and open outflow valve.
7. APU air is inoperative.
8. Stick shaker and pusher remain armed.
9. Landing gear handle is not safe (safety solenoid energized).
10. Engines cannot be restarted.

If nutcracker has failed to air mode:

1. Cabin Pressure Control AUTO / MANUAL .... MANUAL
2. Cabin Press Control Man Hold .... ROTATE TO OPEN
3. Differential Braking .... AS NECESSARY

END

Nutcracker System Fails To Shift To Air Mode At Takeoff

AFM 3-19-80

WARNING: **THRUST REVERSERS ARE OPERATIVE IN FLIGHT IF POWER LEVERS ARE RETARDED TO IDLE.**

WARNING: **GROUND SPOILERS WILL DEPLOY IF POWER LEVERS ARE RETARDED TO GROUND IDLE AND GND SPLR OFF/ARMED SWITCH IS ARMED.**

NOTE: With the nutcracker system not in the AIR mode after takeoff, pressurization will remain at 0.25 psi differential and cabin altitude will climb at approximately the same rate as the airplane. Manual control is still available. If cabin rate of climb exceeds 3,000 feet per minute, rate limiting will occur, driving the outflow valve fully closed.

NOTE: Stick shaker and stick pusher are inoperative if the nutcracker system is not in the AIR mode after takeoff.

1. GND SPLR OFF/ARMED Switch .... OFF
2. NUTCRKR SW TEST Switch .... DEPRESS AND HOLD
3. Landing Gear... UP
4. NUTCRACKER Circuit Breaker (CPO A-13, B-13, C-13)...... PULL
5. NUTCRACKER BAT PWR Circuit Breaker (CPO, D-13)....... PULL
   (For airplanes having ASC 242.)
6. NUTCRKR SW TEST Switch ....RELEASE

   NOTE: On airplanes SN 1000 through 1320 having ASC 381 and airplanes SN 1321 and subsequent, wing anti ice air is exhausted into the main landing gear wheel well area. If slush or ice is the suspected cause of nutcracker failure, selecting WING ANTI ICE ON may correct the problem. After heating the wheel well area for a period of time, the flight crew may then elect to reset the nutcracker system to determine if the problem is corrected.

To restore the nutcracker system to the ground for landing:

7. NUTCRACKER Circuit Breakers (as pulled)...................................
   ....RESET SHORTLY AFTER TOUCHDOWN
8. Speed Brakes... MANUALLY EXTEND
   Automatic deployment of ground spoilers will not be available.

END

‘G’ Monitor System

OM 2A-31-32

Airplanes SN 1034, 1156 and subsequent and airplanes SN 1000 through 1155 with ASC 118 incorporated have a gravity force ('G') monitor system to record the maximum vertical acceleration experienced by the airplane during landing. Data collected by this system is used to assist in determining the requirement for either overweight or hard landing inspections.

The monitoring system is activated during approach at 50 ft radio altitude with the landing gear extended. The system is active until the nose gear nutcracker signals weight-on-wheels. The maximum acceleration sensed, while the system is active, is recorded by the computer. Once deactivated by nutcracker logic, the system remains deactivated until the subsequent approach and landing, when activation criteria are again satisfied.

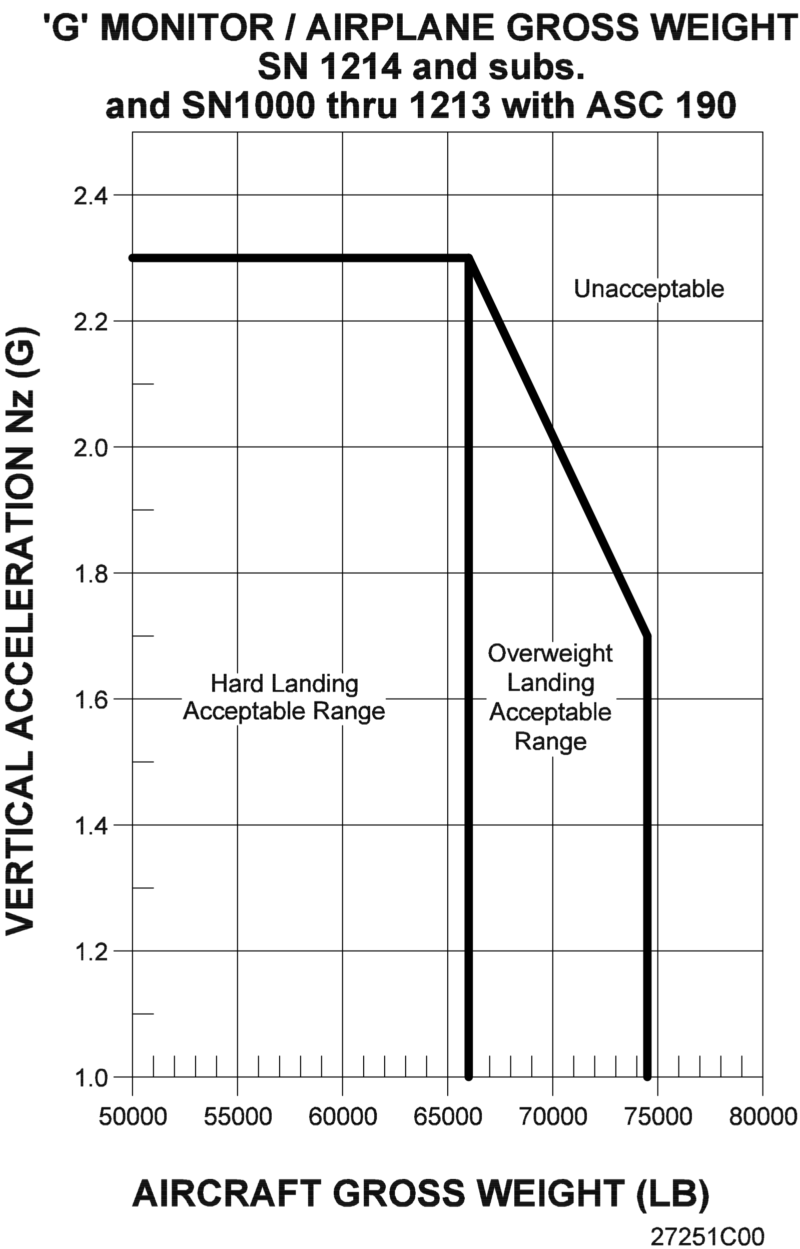
The recorded acceleration will be affected by normal occurrences experienced between main gear touchdown and nose gear nutcracker ground mode logic. These occurrences include but are not limited to:

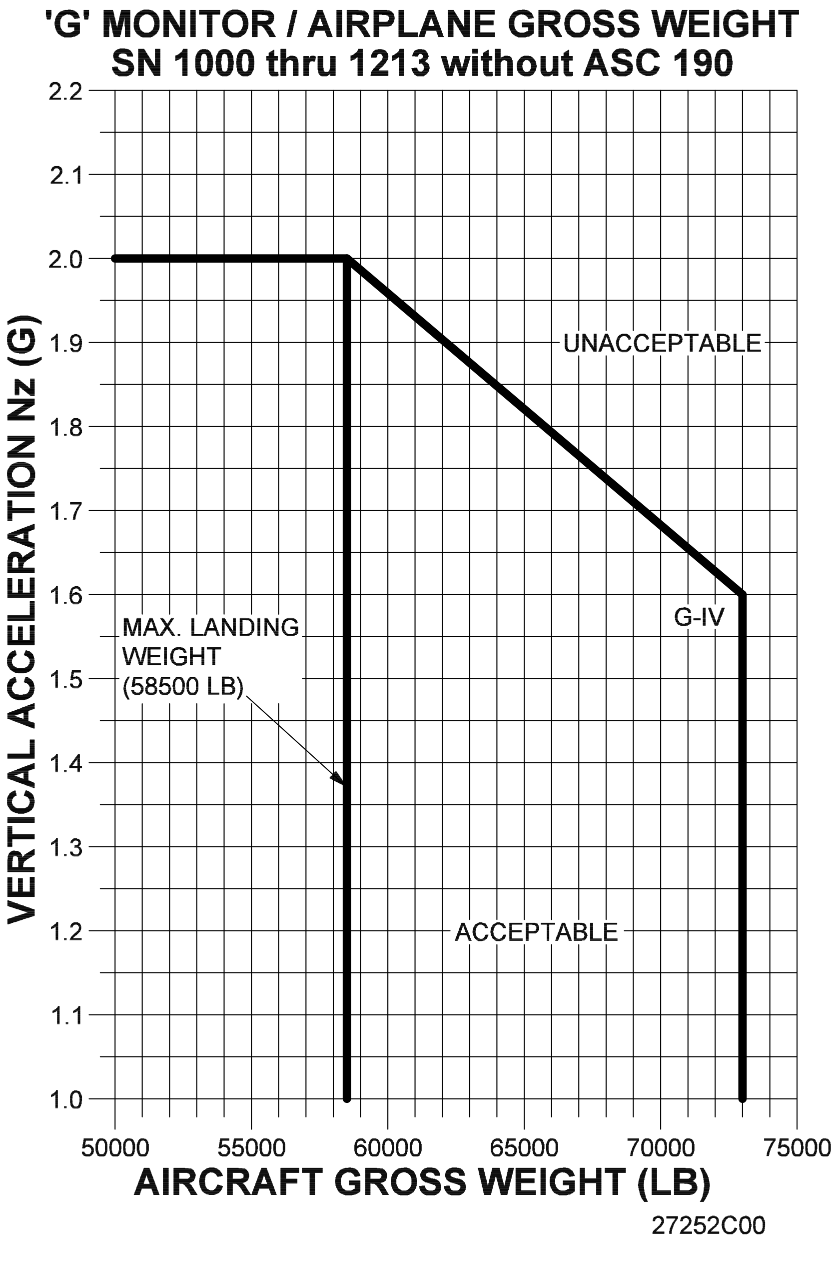
- Ground spoiler deployment
- Rough, bumpy runways
- Travel through runway intersections
- Travel across arresting cable hardware housing

The above items can add 0.2 to 0.3 'G' to the touchdown acceleration and are considered valid loads on the airplane structure. Normal landing 'G' readings may vary from 1.3 to 1.6 'G'.

The established limit to determine the requirement for the hard landing inspection for airplane weights up to and including maximum landing weight is 2.0 'G' (2.3 'G' for airplanes SN 1214 and subsequent and airplanes SN 1000 thru 1213 with ASC 190). The limit to determine the requirement for an overweight landing inspection for airplane weights exceeding maximum landing weight decreases on a linear scale from 2.0 'G' to 1.6 'G' (2.3 'G' to 1.7 'G' for airplanes SN 1214 and subsequent and airplanes SN 1000 thru 1213 with ASC 190). The limit depends on actual airplane weight and assumes that extremely high side-loads were not encountered during landing touchdown. If the actual 'G' recorded for the landing is within limits and no extremely high side loads were encountered at touchdown, no inspection is required. If extremely high side loads were encountered at touchdown, or the 'G' limit is exceeded, the flight crew shall log the event for maintenance action. For additional information, refer to Chapters 5 and 31 of the **GIV Maintenance Manual**.

END

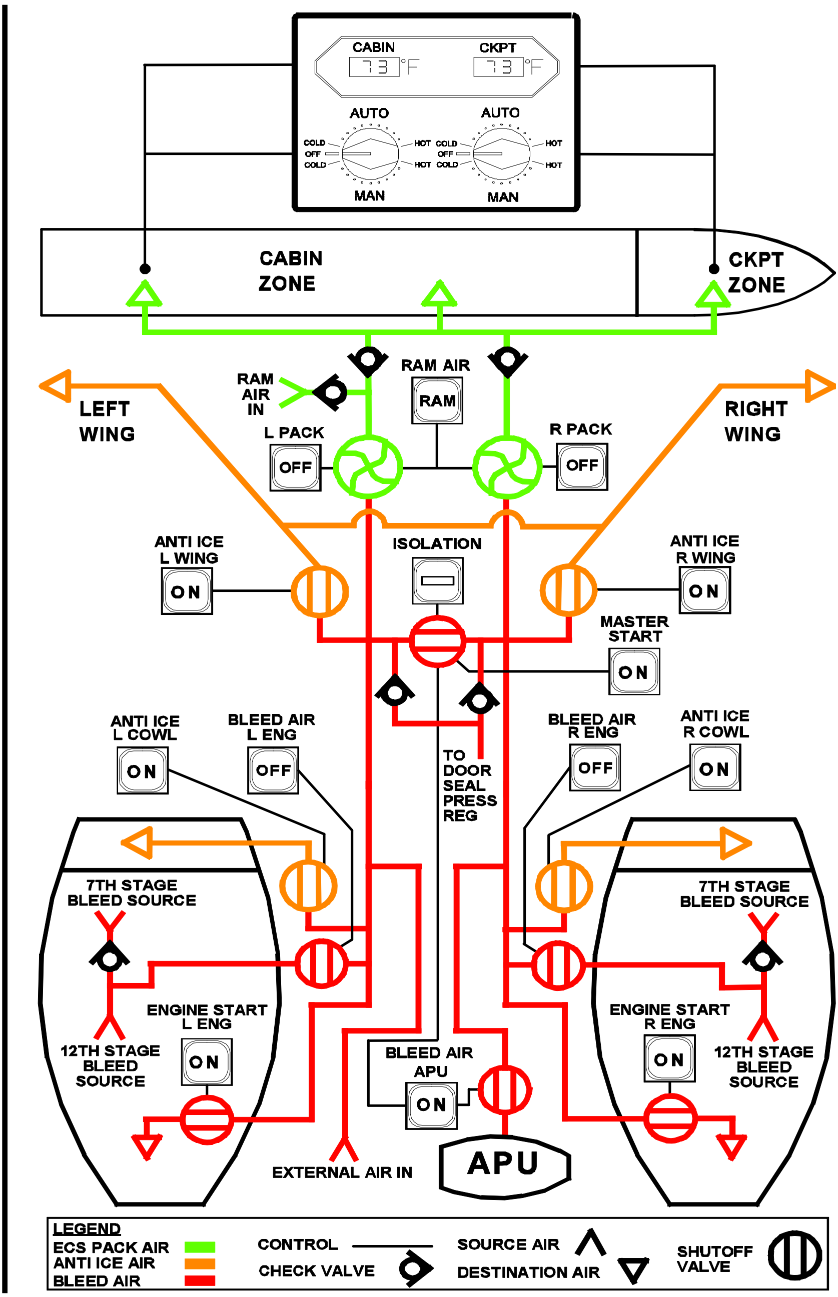

'G' MONITOR / AIRPLANE GROSS WEIGHT
SN 1214 and subs.
and SN1000 thru 1213 with ASC 190
VERTICAL ACCELERATION Nz (G)
2.4
2.2
2.0
1.8
1.6
1.4
1.2
1.0
Unacceptable
Hard Landing Acceptable Range
Overweight Landing Acceptable Range
50000
55000
60000
65000
70000
75000
80000
AIRCRAFT GROSS WEIGHT (LB)
27251C00


'G' MONITOR / AIRPLANE GROSS WEIGHT
SN 1000 thru 1213 without ASC 190
VERTICAL ACCELERATION Nz (G)
2.2
2.1
2.0
1.9
1.8
1.7
1.6
1.5
1.4
1.3
1.2
1.1
1.0
UNACCEPTABLE
MAX. LANDING WEIGHT (58500 LB)
G-IV
ACCEPTABLE
50000
55000
60000
65000
70000
75000
AIRCRAFT GROSS WEIGHT (LB)
27252C00

Notes

Pneumatics / ECS Index

Bleed Air / ECS System Diagram



Loss Of Pressurization

AFM 4-22-10

If cabin pressurization is lost, proceed as follows:

1. Crew Oxygen Masks .... DON
2. **Emergency Descent Procedure** (page EH-4) .... INITIATE
3. Passenger Oxygen Masks .... MANUALLY DEPLOY

   NOTE: Ensure sufficient lighting is available to visually confirm mask deployment and the donning of masks. Advise passengers to don masks.
4. Passenger Oxygen Masks .... VERIFY DEPLOYMENT
5. Pressurization .... RESTORE

   See **Loss of Automatic Pressurization Control**, page EH-6.

THE FOLLOWING STEPS MAY BE HELPFUL IF IT IS SUSPECTED THAT A TORN MAIN ENTRANCE DOOR SEAL OR TORN BAGGAGE DOOR SEAL MAY BE THER CAUSE OF THE LOSS OF PRESSURIZATION:

6. Cabin Pressure Controls and Indications .... CHECK

   If the outflow valve is closed and cabin altitude is still climbing, a baggage door seal or main entrance door seal may be causing the loss of pressurization.
7. COWL ANTI-ICE .... ON

   Increase bleed air pressure by selecting COWL ANTI-ICE ON or by increasing engine power. Cabin rate-of-climb can be controlled by selecting COWL ANT-ICE ON and / or by increasing engine power to maximum continuous setting at higher altitudes, thereby increasing available bleed pressure above 35 psi.
8. Altitude .... DESCEND AS NECESSARY

   If unable to attain 35 psi or greater, or if selecting cowl anti-ice ON results in **COOL TURB HOT** message, descend to lower altitude until cabin rate-of-climb is controllable. Select cowl ant-ice OFF if **COOL TURB HOT** message persists.
9. Oxygen .... USE AS APPROPRIATE

END

Emergency Descent Procedure

AFM 4-22-20

The following procedure assumes structural integrity of airplane.

If airplane structural integrity is in doubt, limit speed as much as possible and avoid high maneuvering loads.

1. Power Levers .... IDLE
2. Airspeed .... ESTABLISH M_{MO} / V_{MO}

   NOTE: An initial pitch attitude of 8° to 10° nose down is recommended to commence descent. As speed approaches M_{MO} / V_{MO}, adjust pitch attitude as necessary to avoid an overspeed condition.
3. Speed Brakes .... EXTEND
4. Airspeed .... MAINTAIN M_{MO} / V_{MO}

   NOTE: It is recommended that the emergency descent be flown manually in order to achieve maximum descent rate.
5. SEAT BELT / NO SMOKING Signs .... ON
6. Transponder Code .... SET 7700
7. Air Traffic Control (ATC)... NOTIFY
8. Level Off ....
   .... 15,000 FT OR MINIMUM ENROUTE ALTITUDE, IF HIGHER

Approach and Landing:

9. Normal Approach .... PERFORM
10. Gear .... DOWN / 3 GREEN

If unable to get gear down for landing and a gear-up landing is planned:

11. GPWS Voice Override .... ON

    NOTE: FOR SPZ 8400 EQUIPPED AIRPLANES: Silence landing gear warning horn by pulling FWC #1 circuit breaker. FOR SPZ 8000 EQUIPPED AIRPLANES: Silence landing gear warning horn by pulling TONE WARN #1 circuit breaker.
12. Pressurization.. MANUAL
13. Outflow Valve .... OPEN
14. Final Approach .... FLAPS 39°
15. Landing... PERFORM UNPRESSURIZED

Continued on next page →

Emergency Descent Procedure, ctd… **AFM 4-22-20**

16. Use final approach speed at VREF or as slow as possible at all planned wheels up landing weights and fly a very shallow approach.
17. Set elevator trim to develop maximum nose up movement. A slight control column push may be required to maintain proper pitch attitude.
18. Target low sink rate at touchdown.
19. Flap segments are likely to break clean away from the wing at touchdown.
20. Touchdown on runway centerline.
21. When aft fuselage contacts runway surface, gently lower nose to runway. Pull aft on control column to keep the weight as light as possible once the nose has contacted the runway.
22. Both Engines ....IMMEDIATELY SHUT DOWN WITH FIRE HANDLES
23. APU MASTER ....OFF
24. Batteries...OFF
25. Directional Control ....MAINTAIN WITH RUDDER

    See **Abnormal Gear Condition – Emergency Landing**, page EG-3.

END

Loss Of Automatic Pressurization Control AFM 3-22-30

1. AUTO / MANUAL Switch.. MANUAL
2. DADC Selector Switch .... OPPOSITE DADC (DADC 1 OR 2)
3. AUTO / MANUAL Switch.. AUTO

If automatic pressurization control is not regained:

4. AUTO / MANUAL Switch.. MANUAL
5. Rate of Climb .... MANUALLY CONTROL TO ±500 FPM

   CAUTION: CLOSELY MONITOR CABIN DIFFERENTIAL PRESSURE. DO NOT ALLOW IT TO EXCEED 9.8 PSID.

   NOTE: When operating in manual, the rate of change should be monitored to maintain a maximum of 500 feet per minute UP or 300 feet per minute DOWN. Care should also be taken to land unpressurized with the outflow valve indicator in the full OPEN position.

If manual pressurization control is not successful and if cabin differential pressure will exceed 9.8 PSID:

6. RAM AIR Switch.. RAM

   WARNING: **SELECTING RAM WILL SHUT OFF BLEED AIR FOR PRESSURIZATION AND THE AIRPLANE WILL DEPRESSURIZE.**

7. Crew Oxygen Masks .... DON
8. Altitude .... DESCEND TO A SAFE ALTITUDE
9. Passenger Oxygen Masks .... MANUALLY DEPLOY

   NOTE: Ensure sufficient lighting is available to visually confirm mask deployment and the donning of masks. Advise passengers to don masks.

Upon reaching a safe altitude, attempt to regain control of the pressurization system:

10. RAM AIR Switch... OFF
11. AUTO or MANUAL Control .... ATTEMPT TO RESTORE

    NOTE: Avoid excessive throttle movements while attempting to regain control of the pressurization system.

END

Pressurization System - Rate Limiting AFM 3-22-40

The following procedure is recommended to return to automatic operation:

1. AUTO / MANUAL Selector Switch.................................. MANUAL
   Manually control system. (Rate should not exceed 500 ft. per minute up or down.) Observe position of outflow valve on indicator.

2. AUTO / MANUAL Selector Switch...................................... AUTO
   If rate-of-change switch is retriggered, PLACE the AUTO / MANUAL Switch in MANUAL and continue flight. Cabin rate-of-change should be monitored to maintain maximum of 500 ft. per minute, up or down.

   CAUTION: WHEN OPERATING IN MANUAL, MONITOR CABIN ALTITUDE CLOSELY, ESPECIALLY IN DESCENT, TO ENSURE THAT CABIN ALTITUDE DOES NOT DECREASE TO LESS THAN LANDING FIELD ELEVATION.

   NOTE: Opposite cabin pressure reference switch position DADC 2 may be selected and procedure repeated, if necessary.

   Care must be taken to land unpressurized with outflow valve in the full OPEN position.

END

Bleed Air System Failure

AFM 3-22-50

In the event a bleed air system failure occurs, the following steps apply:

1. Affected Bleed Air Switch .... OFF
2. Affected BLEED AIR Circuit Breaker ....CHECK
   (L BLEED AIR: PO, A-10; R BLEED AIR: PO, B-10)

   NOTE: If the circuit breaker is popped, wait 5 minutes to allow for circuit cooling prior to resetting the circuit breaker.

For SN 1000 thru 1201 without ASC 298:

If the right system circuit breaker is popped, the ISOLATION VLV OPEN message will be present on EICAS. Even though the message is present, the isolation valve is closed.

NOTE: The isolation valve must be manually opened from the tail compartment in order to start the left engine.

1. Right Bleed Switch .... OFF
2. Right BLEED AIR Circuit Breaker .... ATTEMPT RESET

If CB resets:

1. Isolation Valve .... OPEN
2. Altitude ....DESCEND TO 41,000 FT OR BELOW
3. Flight Into Known Icing Conditions...................................... AVOID

If CB will not reset:

1. Right ECS Pack Switch .... OFF
2. Altitude ....DESCEND TO 41,000 FT OR BELOW
3. Flight Into Known Icing Conditions...................................... AVOID

For all other bleed air system failures:

If the affected system circuit breaker is not popped, pull and reset the circuit breaker.

If resetting the circuit breaker solves the problem, continue flight in normal configuration.

Continued on next page →

Bleed Air System Failure, ctd… AFM 3-22-50

If resetting the circuit breaker does not solve problem or if circuit breaker does not reset:

For Left Bleed Air System:

1. Left Bleed Air Switch .... OFF
2. Isolation Valve .... OPEN
3. Altitude .... MAINTAIN
   41,000 FT OR BELOW FOR REMAINDER OF FLIGHT
4. Flight Into Known Icing Conditions .... AVOID

For Right Bleed Air System:

1. Right Bleed Air Switch .... OFF
2. Isolation Valve .... OPEN
3. Altitude .... MAINTAIN
   41,000 FT OR BELOW FOR REMAINDER OF FLIGHT
4. Flight Into Known Icing Conditions .... AVOID

END

Unpressurized Flight

AFM 3-22-60

If dispatching unpressurized to comply with MMEL requirements, proceed as follows:

1. AUTO / MANUAL Switch .... MANUAL
2. MANUAL HOLD Knob ....
   ....POSITION OUTFLOW VALVE FULLY OPEN
3. RAM AIR .... RAM
4. Maximum Cruise Altitude .... 10,000 FEET

   NOTE: The 60 HZ power supply for cabin entertainment may shut down automatically if the cabin altitude exceeds 8,000 feet.

If smoke is detected in the aft baggage compartment:

5. MANUAL HOLD Knob ....
   ....POSITION OUTFLOW VALVE FULLY CLOSED

   NOTE: Position the outflow valve fully closed will create a slight pressure differential in the cabin. This will help prevent smoke migration into the cabin and allow the smoke to be evacuated. See **Airplane Interior Fire / Smoke / Fumes**, page ED-6.

END

Air Conditioning System Shut Down Or Inoperative

AFM 3-01-10

At altitudes above 41,000 feet with either air conditioning system selected to OFF or inoperative, the respective engine COWL ANTI ICE must be selected ON and the BLEED AIR ISOLATION valve selected to CLOSED.

From GIV AFM, Bleed Air System Limitations: Do not operate above 41,000 feet without both engine bleeds ON and each engine being bled by either the air conditioning system or engine COWL ANTI ICE.

1. Associated Pack Switch .... OFF
2. Operational Pack Bleed Source ....
   ....VERIFY COMPENSATION TO 30 ±3 PSI

END

Air Conditioning System Airflow Hot Or Uncontrollable

AFM 3-01-20

If cool air is not produced in either AUTO, MANUAL, or OFF mode:

1. Affected Air Conditioning PACK Switch .... OFF
   If cool air is not produced in either AUTO, MANUAL or OFF mode, the water separator may be frozen, preventing cool air from flowing through it. To determine whether the water separator is frozen or the Air Cycle Machine (ACM) is developing a problem, select the affected Air Conditioning PACK switch to OFF.

Allow ten (10) minute time period to elapse, then:

2. Affected Air Conditioning PACK Switch ....RESELECT TO ON
   If cool airflow is present, the water separator is most likely the problem.

If cool airflow is present:

3. Temperature Setting .... SELECT SLIGHTLY WARMER
   Select a slightly warmer temperature to preclude water separator from re-freezing.

If warm or hot airflow returns:

4. Malfunctioning Pack .... AS REQUIRED BY FLIGHT CONDITIONS / MISSION REQUIREMENTS
   If warm or hot airflow returns, the ACM is developing a problem. Depending on flight conditions or mission requirements, the malfunctioning air conditioning pack should be managed as required. See **Air Conditioning System Shut Down Or Inoperative**, page EH-10, for bleed air requirements with the air conditioning packs shut off.

END

Left or Right Cooling Turbine Hot

AFM 3-01-30

On ground only:

1. Air conditioning flow control and shutoff valve will automatically close.
2. Associated Air Conditioning Pack Switch................................ OFF

Continued on next page →

Left or Right Cooling Turbine Hot, ctd… AFM 3-01-30

In flight:

1. Current Bleed Air Configuration .... ASSESS
   If COWL and/or WING ANTI ICE is selected ON, see **Temperature Range for Cowl Anti-Icing chart**, page NE-7, to determine whether the use of anti-ice is required.

If COWL and/or WING ANTI-ICE is required, consider departing icing conditions before proceeding to Step 2 OR if COWL and / or WING ANTI-ICE is ON but is not required:

2. Appropriate COWL / WING ANTI-ICE .... OFF
3. Temperature Control Selector Switch (Affected Pack) ....
   .... SELECT WARMER TEMP
4. One (1) Minute .... ALLOW TO ELAPSE

If COOL TURB HOT message remains displayed:

5. Affected (L or R) Pack Switch .... OFF
   CAUTION: DO NOT TURN OFF BOTH PACK SWITCHES AT HIGH ALTITUDE.
   If both air conditioning packs are affected, select only one pack switch OFF.

If COWL ANTI-ICE is required or if airplane altitude is above 41,000 feet:

6. COWL ANTI-ICE .... ON
   Same bleed air system with pack shut down.

If COOL TURB HOT message persists for second pack:

7. Descent To Lower Altitude .... COMMENCE
8. Crew Oxygen Masks / Regulators ON/100%
9. Passenger Oxygen Masks ....
   .... MANUALLY DEPLOY (IF REQUIRED)
10. Second Pack Switch .... OFF
    (If COOL TURB HOT message is still displayed.)
11. Proceed to nearest suitable airport and land.

END

Miscellaneous Index

Related Topics In QRH

Windshield Failure

AFM 3-25-10

If windshield heat failure is detected, cycle the windshield heat control OFF, then ON. If windshield heat can not be regained, flight may be continued, but flight into icing conditions should be avoided. If failure involves a front window, pull appropriate circuit breaker:

- L FRONT POWER (or L FRONT POWER or L FRONT WSHLD): CP, J-8
- R FRONT POWER (or R FRONT POWER or R FRONT WSHLD): CP, K-8
- L SIDE PWR (or L SIDE WSHLD): CP, J-10
- R SIDE PWR (or R SIDE WSHLD): CP, K-10

Windshield crack(s):

1. Upon detection of a crack in outer heating / protective windshield ply, immediately turn windshield heat OFF on affected panel by pulling the appropriate circuit breaker listed above and observe icing restrictions.
2. Upon detection of a crack in either main structural windshield ply, a reduction of cabin pressure differential to 7.5 psi is recommended for remainder of flight.
3. Maintain current airspeed / mach or slower for remainder of flight.
4. Refer to **GIV AFM Configuration Deviation List - Appendix B** for subsequent takeoff considerations.

WARNING: **IF CRACKING IS TO THE INNER GLASS PLY, IT IS RECOMMENDED THAT THE PILOT ADJACENT TO THE CRACK AREA WEAR EYE PROTECTION SUCH AS SMOKE GOGGLES.**

END

Cabin Window Cracked AFM 3-25-20

If the airplane is equipped with the optional cabin window heat system, the middle pane that acts as the battery element may be cracked.

If the middle pane is cracked:

1. Appropriate Cabin Window Heat Circuit Breaker .... PULL
2. Report for maintenance action.

   WARNING: **IT IS RECOMMENDED THAT PASSENGER SEATS ADJACENT TO THE CRACKED WINDOW BE VACATED.**
3. Select an 8,000 ft cabin altitude on the cabin pressure selector panel.
4. Descend to 35,000 ft or below.
5. Maintain cabin pressure differential. Maintain at 7.5 PSID or less.

END

Overweight Landing AFM 4-20-10

If landing at a weight in excess of maximum landing weight is unavoidable, proceed as follows:

1. Longest Available Runway ....UTILIZE

   See **Landing Planning** Data (pages PC-1 thru PC-16) for landing field length requirements.

   CAUTION: TIRE SPEED LIMITATIONS WILL BE EXCEEDED IF TOUCHDOWN IS MADE IN EXCESS OF 182 KNOTS GROUND SPEED. *(195 KNOTS GROUND SPEED WITH ASC 190 AND SN 1214 AND SUBSEQUENT).*
2. Sink Rate and Crab Angle ....MINIMIZE AT TOUCHDOWN

   NOTE: Overweight landings are predicted data and have not been verified by field performance test.
3. Maximum Reverse Thrust ....APPLY
4. Report overweight landing for appropriate maintenance inspections.

   NOTE: For airplanes SN 1156 and subs., and airplanes SN 1000 through 1155 with ASC 118, the overweight landing inspection may not be required if the recorded landing vertical acceleration is within limits. See **'G' Monitor System**, page EG-11, for additional information.

END

Ditching

AFM 4-20-20

No tests or actual ditching have been made. The following procedures will improve the chances of a successful ditching.

1. Distress Message .... TRANSMIT
2. Fuel Load .... MINIMUM
3. Cabin and Passengers .... PREPARE
4. Heading .... PARALLEL SWELLS
5. Emergency Power .... ON
6. Landing Gear .... UP

   NOTE: FOR SPZ 8400 EQUIPPED AIRPLANES: Silence landing gear warning horn by pulling FWC #1 circuit breaker. FOR SPZ 8000 EQUIPPED AIRPLANES: Silence landing gear warning horn by pulling TONE WARN #1 circuit breaker.

7. Flaps .... 39°
8. GPWS Voice Override .... ON
9. RAM AIR .... RAM

   NOTE: If RAM air is inoperative, select BOTH ECS PACKS – OFF.

10. Cabin Pressure Control .... MANUAL
11. Outflow Valve .... CLOSE
12. Differential Pressure .... ZERO
13. Stall Barrier .... OFF
14. Final Approach Speed .... VREF
15. Descent Rate .... APPROXIMATELY 200 FPM
16. Touchdown Configuration .... ESTABLISH

    NOTE: Power levers should be closed, airplane rotated to normal landing attitude (airspeed approximately 1.25 Vs), slightly nose up, and contact made with water at minimum forward speed and minimum sink rate. At water entry, expect airplane attitude to be approximately 7 to 8 degrees up. Airspeed at water entry should be just above stall speed. This is to minimize structural damage following water contact.

17. Fire Handles .... PULL
18. Life Rafts .... REMOVE
19. Airplane .... ABANDON

Continued on next page →

CREW DUTIES FOLLOWING DITCHING:

Captain:

1. Emergency Exit Lights ....ON
2. Remove life raft #1 from stowed position. Tie life raft mooring line to fastened seatbelt at forward exit window, either left or right side.
3. Remove forward exit window and deploy life raft #1 out window.
4. Exit window and follow mooring line to life raft. Board life raft.
5. Direct passengers to follow mooring line to life raft. Assist passengers into life raft.

First Officer:

1. Emergency Exit Lights ....ON
2. ELT ....ON
3. Remove life raft #2 from stowed position. Tie life raft mooring line to fastened seatbelt at aft exit window - same side as raft #1.
4. Remove aft exit window and deploy life raft #2 out window.
5. Exit window and follow mooring line to life raft #2. Board raft.
6. Direct passengers to follow mooring line to life raft. Assist passengers into life raft.

Cabin Crewmember (If Onboard):

1. Assist Captain and First Officer in obtaining life rafts #1 and #2 from stowed position.
2. Assist Captain and First Officer with securing life rafts by tying life raft mooring line to fastened seatbelt at exit windows.
3. Direct Captain and First Officer to open exit windows and deploy life rafts.

   NOTE: For passenger accountability, life rafts go out same side of airplane.
4. Have Captain and First Officer follow life raft mooring lines to rafts and board.
5. Continue to direct evacuation from inside airplane. Assist passengers.

Continued on next page →

Ditching, ctd… AFM 4-20-20

6. If time permits, gather first aid kit, blankets, food, garbage bags, etc., to take to life rafts.
7. Depart via exit window and board life raft.

END

Immediate Return for Landing AFM 4-20-50

NOTE: If an immediate return to the departure airport is required for any reason, the landing should be accomplished using 39° flaps (if available) and the longest runway available. If less than 39° flaps are to be used for landing, the flight crew should consider runway length requirements, brake energy requirements, and tire-speed limitations. If there is any doubt, the flight crew should consider diversion to an airport with a longer runway or delaying landing until a lower airplane weight is attained.

1. Final Approach Speed .... VREF

If landing with flaps less than 39°, perform Step 2. If landing with flaps 39°, proceed to Step 3.

2. GPWS / GND SPLR FLAP ORIDE .... ON
3. Landing Area .... FIRST 1,000 FEET OF RUNWAY
4. Sink Rate / Crab Angle .... MINIMIZE PRIOR TO TOUCHDOWN
5. Maximum Available Reverse Thrust .... USE PRIOR TO USING BRAKES
6. Brake TemperaturesCHECK AFTER LANDING (if able)

END

Main Entrance Door Not Secure AFM 4-25-10

WARNING: **DO NOT TOUCH THE SECONDARY LATCH HANDLE OR THE DOOR RELEASE HANDLE.**

1. Door Locking Handles and Bayonet Notches .. VISUALLY CHECK

Main Entrance Door Not Secure, ctd… AFM 4-25-10

If main door appears to be secure and the locked (extended) position of the Bayonet Latches can be confirmed visually.

2. Flight .... CONTINUE

If main door does not appears to be secure:

3. Cabin Pressure Differential (DFRN PRESS) .... REDUCE
4. Airplane .... LAND AS SOON AS POSSIBLE

END

Planned Airplane Evacuation OM 5-20-50

During evacuation, all occupants should stay as close to the floor as possible to enhance visibility and maximize breathable air. If the external baggage compartment door is used, advise the passengers that the door is approximately seven feet above the ground with landing gear extended. Once out of the airplane, direct passengers to a safe location upwind of the airplane. Order passengers to remain in a group and not to smoke.

1. Airplane .... STOP
2. Parking Brake .... SET
3. Ground Spoilers .... OFF
4. Speed Brakes .... STOW
5. Flaps .... DOWN
6. CABIN PRESSURE CONTROL .... MANUAL
7. Outflow Valve .... FULL OPEN
8. ATC .... NOTIFY
9. L / R FUEL COCKS .... OFF
10. APU MASTER .... OFF
11. L / R FIRE Handles .... PULL
12. L / R FIRE Handles .... ROTATE FULLY TO DISCH 1 / DISCH 2
13. BATTERIES 1 and 2 .... OFF
14. Passengers / Crew .... EVACUATE

END

Notes

Supplemental Procedures / Data Index

Windshear / Microburst

AFM APP E

Low-level windshear, microburst, or downburst may develop within an unstable air mass, during frontal passage, and in the vicinity of thunderstorms. These conditions can create rapidly changing wind directions and velocities. An even more dangerous condition can result from high velocity down flows that can force the aircraft into ground impact unless very prompt and drastic actions are taken.

Severe microbursts may occur with greater frequency than originally believed. However, they are of short duration, two (2) to five (5) minutes, about two(2) miles in diameter, and can have a down flow in center of as much as 6000to 7000 feet per minute.

INCREASING PERFORMANCE CONDITIONS:

Significant airspeed and altitude gain may be caused by increasing headwind, decreasing tailwind and updrafts.

Takeoff:

When the amber WS caution annunciator (if installed) illuminates during takeoff, or the crew recognizes the signs of increasing performance conditions, the following procedures should be followed:

1. The flight crew should be alerted to the possibility that the increased performance could be followed by decreasing performance conditions.
2. Attitude and power (thrust) corrections should be minor, in order to minimize any “fall-off” in performance when the proverse windshear event ends.

Approach / Landing:

When the amber WS caution annunciator (if installed) illuminates during final approach, or the crew recognizes the signs of increasing performance conditions, the following procedures should be followed:

1. The flight crew should be alerted to the possibility of decreasing performance conditions. Coupled with other weather factors, initiating a go-around as early as possible should be considered.
2. Wind and gust allowances should be added to the approach speed, increasing thrust if necessary. It may be necessary to disengage autopilot/autothrottle.

Continued on next page →

3. Avoid sinking below the approach glidepath or letting the power levers remain at flight idle for extended periods of time.

DECREASING PERFORMANCE CONDITIONS:

Significant airspeed and altitude loss may be caused by decreasing headwind, increasing tailwind and downdrafts.

When conditions exist where low-level windshear, microburst, or downburst may be present, the pilot should consider diversion to an alternate airport or delay takeoff or landing until the risk of an encounter is minimized. If the condition is unavoidable or unexpectedly encountered, the flight crew may expect a rapid decay in airspeed and/or an increase in sink rate.

Takeoff:

When the audible "WIND SHEAR--WIND SHEAR--WIND SHEAR" WARNING occurs, and the red WS WARN annunciator (if installed) is illuminated during takeoff, or the flight crew recognizes the signs of decreasing performance conditions, the following procedures should be followed:

1. The flight crew should be alerted to the possibility of subsequent decreasing performance conditions.
2. Disconnect the Autopilot and apply Go-Around Power.
3. Rotate at 3 to 4 degrees per seconds to increase pitch attitude to the highest possible value.
4. When stick shaker is encountered, or as V_2 / V_{REF} is approached, reduce pitch rate/angle of attack to intercept V_2 / V_{REF} -20 KCAS.
5. Engine overboost should be avoided unless the airplane continues to descend and airplane safety is in doubt. When airplane safety has been assured, adjust thrust to maintain engine parameters within approved limits.
6. DO NOT retract flaps or landing gear until safe climb-out is assured.

Continued on next page →

Approach / Landing:

When the audible "WIND SHEAR--WIND SHEAR--WIND SHEAR" WARNING occurs, and the red WS WARN annunciator (if installed) is illuminated during final approach, or the flight crew recognizes the signs of decreasing performance conditions, the following procedures should be followed:

1. The flight crew should be alerted to the possibility of subsequent decreasing performance conditions.
2. Disconnect the Autopilot and apply Go-Around Power.
3. Rotate at 3 to 4 degrees per seconds to increase pitch attitude to the highest possible value.
4. When stick shaker is encountered, or as V_2/V_{REF} is approached, reduce pitch rate/angle of attack to intercept V_2/V_{REF} -20 KCAS.
5. Engine overboost should be avoided unless the airplane continues to descend and airplane safety is in doubt. When airplane safety has been assured, adjust thrust to maintain engine parameters within approved limits.
6. DO NOT retract flaps or landing gear until safe climb-out is assured.

END

Volcanic Ash Encounter

AFM APP E

Flight through volcanic ash should be avoided. If volcanic ash is encountered, reverse course to clear the ash cloud and inform ATC. The autothrottle should be disconnected. A low power setting is recommended (idle is preferred), with airstart ignition OFF.

Volcanic ash may be difficult to detect, however, flight crews have reported the following indications:

- Smoke and dust with acrid odor, similar to electrical smoke, appearing in cockpit.
- Engine malfunction, e.g., a surge condition with increasing TGT and/or flameout.

Continued on next page →

Volcanic Ash Encounter, ctd… AFM APP E

- At night, St. Elmo's fire and/or static discharge may be seen around the windshield. (If static discharge is observed, select the windshield heat OFF.)

If one or both engines flame out, an immediate relight is **not** recommended until clear of ash cloud.

If both engines flame out and as RPM is decreasing, perform the following steps IMMEDIATELY:

1. Reverse course to clear the ash cloud and inform ATC or encounter and course change.
2. Altitude / Airspeed .... DESCEND AT VMO/MMO TO 25,000 FT, THEN SLOW TO 210 KCAS

   NOTE: Use of speed brakes is **not** recommended. Use of the Standby Electrical Power System (ABEX) generator is not possible with a windmilling engine.

   CAUTION: MANEUVERS SHOULD BE LIMITED TO THE MINIMUM NECESSARY BANK AND PITCH ANGLES, SINCE HYDRAULIC BOOST WILL BE LOST AS RPM DECAYS.

   WARNING: **ENGINE DAMAGE MAY RESULT IF RPM IS NOT ALLOWED TO STABILIZE AT IDLE BEFORE ADVANCING POWER LEVERS.**

3. Descent To Airstart Envelope..CONTINUE / CLEAR ASH CLOUD (Sea Level to 25,000 ft and 200 KCAS to 324 KCAS)
4. **Dual Engine Flameout** Procedure (Page EC-4)...........CONSULT

END

Heavy Rain / Hail Encounter AFM APP E

The Tay engine is tolerant of water ingestion rates normally encountered in flight. During flight through heavy rain or hail, it is possible that there may be fluctuations in engine parameters, in particular, a noticeable drop in indicated TGT.

The following general procedures are recommended if heavy rain or hail is encountered:

- Avoid rapid power adjustments, if possible.
- Select Airstart Ignition (L / R AIR START IGN) to ON.

Continued on next page →

- Select autothrottle to OFF.
- Maintain as high a power setting as possible.

Engine parameters should return to normal immediately on leaving the area of heavy rain.

If both engines flame out, an immediate relight is recommended. As engine RPM is decreasing, perform the following steps IMMEDIATELY:

1. Power Levers .... IDLE
2. Airstart Ignition (L / R AIR START IGN) .... ON
3. Altitude / Airspeed .... DESCEND AT V_{MO}/M_{MO} TO 25,000 FT, THEN SLOW TO 210 KCAS

   NOTE: Use of speed brakes is **not** recommended. Use of the Standby Electrical Power System (ABEX) generator is not possible with a windmilling engine.

   CAUTION: MANEUVERS SHOULD BE LIMITED TO THE MINIMUM NECESSARY BANK AND PITCH ANGLES, SINCE HYDRAULIC BOOST WILL BE LOST AS RPM DECAYS.

   CAUTION: **FOR AIRPLANES SN 1000 THROUGH 1249 WITHOUT ASC 304:** THE DUTY CYCLE FOR CONTINUOUS (AIRSTART) IGNITION WITHOUT ASC 304 IS FIVE (5) MINUTES ON AND THIRTY (30) MINUTES OFF FOR COOLING. THERE IS NO LIMITATION ON THE IGNITION WHEN USED IN A THIRTY (30) SECONDS ON, THIRTY (30) SECONDS OFF CYCLE.

   CAUTION: **FOR AIRPLANES SN 1250 AND SUBSEQUENT, AND SN 1000 THROUGH 1249 WITH ASC 304:** THERE IS NO DUTY CYCLE TIME LIMITATION FOR CONTINUOUS (AIRSTART) IGNITION WITH ASC 304.

   CAUTION: ENGINE DAMAGE MAY RESULT IF RPM IS NOT ALLOWED TO STABILIZE AT IDLE BEFORE ADVANCING POWER LEVERS.

If engine(s) DO NOT relight:

1. Descent To Airstart Envelope .... CONTINUE (Sea Level to 25,000 ft and 200 KCAS to 324 KCAS)
2. Airplane .....PROCEED TO NEAREST SUITABLE LANDING SITE
3. **Dual Engine Flameout** Procedure (Page EC-4)........... CONSULT

END

Turbulence Penetration / Severe Gust Encounter

AFM APP E

Turbulence penetration procedures apply to flying at altitude and should not be confused with the low altitude wind shear precautions recommended for the traffic pattern and landing approach phase of the mission.

If possible, flight through turbulence should be avoided. Flying the recommended speeds at reduced altitudes produces greater buffet margins for the same intensity of turbulence.

Continued use of the autopilot will reduce pilot workload. However, use of the Flight Director (FD) vertical modes is not advised in severe turbulence. The basic pitch attitude and heading hold autopilot modes will reduce excessive control surface motion and attitude changes in severe turbulence. Airplane pitch motions and ride qualities are aggravated when FD vertical modes are engaged during these flight conditions.

The following general procedures are recommended if SEVERE gust turbulence is encountered:

- Avoid rapid power adjustments, if possible.
- Select Airstart Ignition (L / R AIR START IGN) to ON.
- Select autothrottle to OFF.

If both engines flame out, an immediate relight is recommended. As engine RPM is decreasing, perform the following steps IMMEDIATELY:

1. Power Levers.. IDLE
2. Airstart Ignition (L / R AIR START IGN) .... ON
3. Altitude / Airspeed ....DESCEND AT 270 KCAS / 0.75 M_T UNTIL OUT OF TURBULENCE, THEN DESCEND AT V_{MO}/M_{MO} TO 25,000 FEET

   NOTE: Use of speed brakes is **not** recommended. Use of the Standby Electrical Power System (ABEX) generator is not possible with a windmilling engine.

   CAUTION: MANEUVERS SHOULD BE LIMITED TO THE MINIMUM NECESSARY BANK AND PITCH ANGLES, SINCE HYDRAULIC BOOST WILL BE LOST AS RPM DECAYS.

   CAUTION: **FOR AIRPLANES SN 1000 THROUGH 1249 WITHOUT ASC 304:** THE DUTY CYCLE FOR CONTINUOUS (AIRSTART) IGNITION WITHOUT ASC 304 IS FIVE (5) MINUTES ON AND THIRTY (30) MINUTES OFF FOR COOLING. THERE IS NO LIMITATION ON THE IGNITION WHEN USED IN A THIRTY (30) SECONDS ON, THIRTY (30) SECONDS OFF CYCLE.

Continued on next page →

CAUTION: **FOR AIRPLANES SN 1250 AND SUBSEQUENT, AND SN 1000 THROUGH 1249 WITH ASC 304:** THERE IS NO DUTY CYCLE TIME LIMITATION FOR CONTINUOUS (AIRSTART) IGNITION WITH ASC 304.

CAUTION: ENGINE DAMAGE MAY RESULT IF RPM IS NOT ALLOWED TO STABILIZE AT IDLE BEFORE ADVANCING POWER LEVERS.

If engine(s) DO NOT relight:

1. Descent To Airstart Envelope .... CONTINUE (Sea Level to 25,000 ft and 200 KCAS to 324 KCAS)
2. Airplane .....PROCEED TO NEAREST SUITABLE LANDING SITE
3. **Dual Engine Flameout** Procedure (Page EC-4)........... CONSULT

Airspeed Parameters:

1. Recommended turbulence penetration airspeed is 270 KCAS / 0.75 MT, whichever is lower.
2. A minimum speed of 1.5 V_S is recommended to maintain adequate buffet margins.
3. Severe turbulence will cause large and often rapid variations in indicated airspeed.

   CAUTION: DO NOT CHASE AIRSPEED.

Attitude Parameters:

1. Maintain the desired pitch attitude and keep wings level.
2. Large and sudden control and power changes should be avoided.

Passenger Warning:

1. ST BELT and/or NO SMOK/ST BELT Switch .... ON

If Autopilot is ON:

1. Use of the basic autopilot ATTITUDE and HEADING HOLD modes is recommended.
2. Avoid use of flight director VERTICAL modes.
3. Pilot inputs should be made using the turn and pitch controller, if installed.

Continued on next page →

Turbulence Penetration / Severe Gust Encounter, ctd… AFM APP E

4. Avoid using touch control steering in severe turbulence.
5. Severe conditions may cause the autopilot to disengage.

If Autopilot is OFF or Disengaged:

1. Hand-flying the airplane again requires basic attitude control.
2. Pitch and roll may best be controlled with the control yoke only.
3. Use of rudder is not recommended and may actually aggravate the situation.

Yaw Damper:

WARNING: **DO NOT FLY INTO AREAS OF KNOWN SEVERE TURBULENCE WITH A FAILED YAW DAMPER.**

1. The yaw damper should be engaged at all times.
2. If in turbulence with yaw damper inoperative or disengaged, avoid chasing airplane motion with rudder. Attempt to hold rudder pedals stationary and wings level.

END

Bird Ingestion AFM APP E

If both engines flame out, an immediate relight is recommended. As engine RPM is decreasing, perform the following steps IMMEDIATELY:

1. Power Levers.. IDLE
2. Airstart Ignition (L / R AIR START IGN) ....ON
3. Altitude / Airspeed ....DESCEND AT 210 KCAS

If at low altitude and unable to achieve immediate relight, prepare for a dual engine out landing. **See Engines Index, page EC-1**, for procedures as appropriate.

NOTE: Use of speed brakes is **not** recommended. Use of the Standby Electrical Power System (ABEX) generator is not possible with a windmilling engine.

CAUTION: MANEUVERS SHOULD BE LIMITED TO THE MINIMUM NECESSARY BANK AND PITCH ANGLES, SINCE HYDRAULIC BOOST WILL BE LOST AS RPM DECAYS.

Continued on next page →

CAUTION: **FOR AIRPLANES SN 1000 THROUGH 1249 WITHOUT ASC 304:** THE DUTY CYCLE FOR CONTINUOUS (AIRSTART) IGNITION WITHOUT ASC 304 IS FIVE (5) MINUTES ON AND THIRTY (30) MINUTES OFF FOR COOLING. THERE IS NO LIMITATION ON THE IGNITION WHEN USED IN A THIRTY (30) SECONDS ON, THIRTY (30) SECONDS OFF CYCLE.

CAUTION: **FOR AIRPLANES SN 1250 AND SUBSEQUENT, AND SN 1000 THROUGH 1249 WITH ASC 304:** THERE IS NO DUTY CYCLE TIME LIMITATION FOR CONTINUOUS (AIRSTART) IGNITION WITH ASC 304.

CAUTION: ENGINE DAMAGE MAY RESULT IF RPM IS NOT ALLOWED TO STABILIZE AT IDLE BEFORE ADVANCING POWER LEVERS.

If engine(s) DO NOT relight:

1. Descent To Airstart Envelope .... CONTINUE
   (Sea Level to 25,000 ft and 200 KCAS to 324 KCAS)
2. Airplane .....PROCEED TO NEAREST SUITABLE LANDING SITE
3. **Dual Engine Flameout Procedure** (Page EC-4) .... CONSULT

END

Lightning Strike

AFM APP E

The theory that lightning strikes will be avoided if thunderstorms are avoided, or radar-indicated precipitation is avoided by greater than twenty (20) miles, is false. Research and experience has shown that airplanes have been struck by lightning in clear air (especially at higher altitudes), at distances of up to 50 miles from thunderstorms and radar-indicated precipitation – the proverbial “Bolt From The Blue”. Electrical activity generated by thunderstorms may exist even after the thunderstorm cell has decayed.

Research and experience has also shown that flight through precipitation, volcanic ash or heavily polluted air can cause an airplane to experience electrostatic discharge or “triggered” lightning.

The probability of a lightning strike to an airplane flying in or near a thunderstorm increases from a minimum at the thunderstorm base to a maximum at the 36,000 to 40,000 foot level.

Continued on next page →

Lightning Strike, ctd… AFM APP E

Lightning strikes at high altitude generally result in greater total charge transfers, and damage is usually worse for large total current transfers. The entire surface of the airplane may be susceptible to lightning attachment. However, strikes are more probable to particular areas such as the airplane's extremities (nose, wingtips, tail) and composite surfaces.

If both engines flame out, an immediate relight is recommended. As engine RPM is decreasing, perform the following steps IMMEDIATELY:

1. Power Levers..IDLE
2. Airstart Ignition (L / R AIR START IGN) ....ON
3. Altitude / Airspeed .... DESCEND AT VMO/MMO TO 25,000 FT, THEN SLOW TO 210 KCAS

   NOTE: Use of speed brakes is **not** recommended. Use of the Standby Electrical Power System (ABEX) generator is not possible with a windmilling engine.

   CAUTION: MANEUVERS SHOULD BE LIMITED TO THE MINIMUM NECESSARY BANK AND PITCH ANGLES, SINCE HYDRAULIC BOOST WILL BE LOST AS RPM DECAYS.

   CAUTION: **FOR AIRPLANES SN 1000 THROUGH 1249 WITHOUT ASC 304:** THE DUTY CYCLE FOR CONTINUOUS (AIRSTART) IGNITION WITHOUT ASC 304 IS FIVE (5) MINUTES ON AND THIRTY (30) MINUTES OFF FOR COOLING. THERE IS NO LIMITATION ON THE IGNITION WHEN USED IN A THIRTY (30) SECONDS ON, THIRTY (30) SECONDS OFF CYCLE.

   CAUTION: **FOR AIRPLANES SN 1250 AND SUBSEQUENT, AND SN 1000 THROUGH 1249 WITH ASC 304:** THERE IS NO DUTY CYCLE TIME LIMITATION FOR CONTINUOUS (AIRSTART) IGNITION WITH ASC 304.

   CAUTION: ENGINE DAMAGE MAY RESULT IF RPM IS NOT ALLOWED TO STABILIZE AT IDLE BEFORE ADVANCING POWER LEVERS.

If engine(s) DO NOT relight:

1. Descent To Airstart Envelope....................................... CONTINUE (Sea Level to 25,000 ft and 200 KCAS to 324 KCAS)
2. Airplane..... PROCEED TO NEAREST SUITABLE LANDING SITE
3. **Dual Engine Flameout** Procedure (Page EC-4)...........CONSULT

END

Circuit Breaker Listing Disclaimer

GAC

Disclaimer

The circuit breaker listings in this section are based on the production airplane. Differences will exist from these lists when systems or functionality were added during the completion phase or post entry-into-service by another mod center prior to the same items being incorporated as part of the production airplane.

Essential DC Bus Circuit Breakers

Circuit Breaker Name	Panel	Loc.	Control
PILOT 1	**PDB**		
AC EXT PWR	PO	A-8	PILOT 1
AFT EMER BATT	P	I-13	PILOT 1
AIR INLET DOOR	PO	C-11	PILOT 1
APU FIRE EXT	P	I-10	PILOT 1
BATT AMMETER	PO	A-7	PILOT 1
BATT CHGR CONT	PO	A-6	PILOT 1
BOT A/C LT GND OPER	P	E-6*	PILOT 1
BOT A/C LT GND OPER	P	F-9*	PILOT 1
CABIN PRESS IND	PO	A-12	PILOT 1
CKPT TEMP CONT	PO	B-13	PILOT 1
CKPT/CABIN TEMP IND	PO	A-11	PILOT 1
ELWS #1	PO	A-9	PILOT 1
ENGINE START	P	K-6	PILOT 1
EPMP SW PWR #1	PO	A-5	PILOT 1
ESS DC VM	P	D-13	PILOT 1
FUEL PUMP IND	PO	A-4	PILOT 1
FUEL X FLOW V	PO	D-2	PILOT 1
FWD IMPACT	P	J-13	PILOT 1
L #1 IGN	P	I-8	PILOT 1
L AIR COND	PO	C-13	PILOT 1
L BLEED AIR	PO	A-10	PILOT 1
L FIRE DET LOOP B	P	G-6	PILOT 1
L FUEL S/O	PO	A-2	PILOT 1
L FUELING S/O	PO	A-3	PILOT 1
L SEC LOCK	P	G-7	PILOT 1
L T/REV CONTROL	P	I-7	PILOT 1
MAIN PUMP CONT	PO	A-1	PILOT 1
R #1 IGN	P	I-9	PILOT 1
R BLEED AIR IND	PO	C-12	PILOT 1
SGL PACK	PO	C-14	PILOT 1
WARN LTS PWR #1	P	F-1	PILOT 1
WARN LTS PWR #2	P	F-2	PILOT 1
WARN LTS PWR #3	P	F-3	PILOT 1
WARN LTS PWR #4	P	F-4	PILOT 1
WARN LTS PWR #5	P	F-5	PILOT 1
WARN LTS PWR #6	P	G-1*	PILOT 1
WARN LTS PWR #6	P	G-2*	PILOT 1
WARN LTS PWR #7	P	G-2*	PILOT 1
WARN LTS PWR #7	P	G-3*	PILOT 1
WHEEL WELL LTS	P	F-6*	PILOT 1
WHEEL WELL LTS	P	F-10*	PILOT 1

* Depending on effectivity.

Continued on next page →

Essential DC Bus Circuit Breakers, ctd…

Circuit Breaker Name	Panel	Loc.	Control
PILOT 2	**PDB**		
#2 STANDBY WARN PWR	P	B-1	PILOT 2
AFT IMPACT	P	K-13	PILOT 2
ANN LTS CONT STBY	P	B-3*	PILOT 2
ANN LTS CONT STBY	P	C-3*	PILOT 2
APU START	P	H-10	PILOT 2
BACKUP CONT PWR	PO	B-7	PILOT 2
BATT CHGR FAIL ANNUN	PO	B-6	PILOT 2
CABIN PRESS 28V	PO	B-11	PILOT 2
CABIN TEMP CONT	PO	D-14	PILOT 2*
DOME LT	P	B-6	PILOT 2
ELWS #2	PO	B-9	PILOT 2
EPMP SW PWR #2	PO	B-5	PILOT 2
FIRE BELL	P	B-4*	PILOT 2
FIRE BELL	P	B-5*	PILOT 2
FIRE BELL	P	C-4*	PILOT 2
FIRE EXT SHOT #2	P	H-8	PILOT 2
FLAP/STAB WARN	P	D-3	PILOT 2
FUEL INTERTANK V	PO	B-4	PILOT 2
FUEL LOW LEVEL	PO	B-1	PILOT 2
FWD EMER BATT	P	H-13	PILOT 2
L BLEED AIR IND	PO	B-12	PILOT 2
OVHD ANN LTS PWR #4	P	A-4*	PILOT 2
OVHD ANN LTS PWR #4	P	C-4*	PILOT 2
OVHD ANN LTS PWR #5	P	A-5*	PILOT 2
OVHD ANN LTS PWR #5	P	C-5*	PILOT 2
OVHD PNL PRI	P	B-9	PILOT 2
PED ANN LTS PWR	P	D-2	PILOT 2
R AIR COND	PO	D-13	PILOT 2
R BLEED AIR	PO	B-10	PILOT 2
R CKPT ANN LTS PWR	P	B-2*	PILOT 2
R CKPT ANN LTS PWR	P	C-2*	PILOT 2
R ENG O'HT	P	H-9	PILOT 2
R FIRE DET LOOP B	P	H-6	PILOT 2
R FUEL S/O	PO	B-2	PILOT 2
R FUELING S/O	PO	B-3	PILOT 2
R SEC LOCK	P	H-7	PILOT 2
SPD BRAKE/FLAP ALARM	P	D-4	PILOT 2
STBY PWR CONT	P	H-12	PILOT 2
UTILITY LTS	P	D-9*	PILOT 2
UTILITY LTS	P	E-9*	PILOT 2
WARN LTS PWR #10	P	G-5*	PILOT 2
WARN LTS PWR #10	P	H-3*	PILOT 2
WARN LTS PWR #11	P	H-3*	PILOT 2
WARN LTS PWR #11	P	H-4*	PILOT 2

* Depending on effectivity.

Continued on next page →

Essential DC Bus Circuit Breakers, ctd…

Circuit Breaker Name	Panel	Loc.	Control
PILOT 2, ctd…	**PDB**		
WARN LTS PWR #12	P	H-4*	PILOT 2
WARN LTS PWR #12	P	H-5*	PILOT 2
WARN LTS PWR #13	P	H-5*	PILOT 2
WARN LTS PWR #13	P	I-4*	PILOT 2
WARN LTS PWR #14	P	I-4*	PILOT 2
WARN LTS PWR #14	P	I-5*	PILOT 2
WARN LTS PWR #15	P	I-5*	PILOT 2
WARN LTS PWR #15	P	J-5*	PILOT 2
WARN LTS PWR #8	P	G-3*	PILOT 2
WARN LTS PWR #8	P	G-4*	PILOT 2
WARN LTS TEST	P	B-4*	PILOT 2
WARN LTS TEST	P	J-5*	PILOT 2
PILOT 3	**PDB**		
#1 STANDBY WARN PWR	P	A-1	PILOT 3
ANN LTS CONT MAIN	P	A-3*	PILOT 3
ANN LTS CONT MAIN	P	B-3*	PILOT 3
APU FIRE WARN	P	A-4*	PILOT 3
APU FIRE WARN	P	B-4*	PILOT 3
APU PWR #3	P	L-10	PILOT 3
ENGINE OILER	P	G-10*	PILOT 3
ENGINE OILER	P	L-9*	PILOT 3
FIRE EXT SHOT #1	P	G-8	PILOT 3
FLOOD LTS OVERRIDE	P	A-6	PILOT 3
L #2 IGN	P	J-8	PILOT 3
L CKPT ANN LTS PWR	P	A-2*	PILOT 3
L CKPT ANN LTS PWR	P	B-2*	PILOT 3
L ENG O'HT	P	G-9	PILOT 3
L FIRE DET LOOP A	P	I-6	PILOT 3
L FLT PNL/GSHLD	P	A-7	PILOT 3
L T/R EMER STOW	P	K-7*	PILOT 3
L T/R EMER STOW	P	L-7*	PILOT 3
LDG WARN HORN	P	E-4	PILOT 3
OVHD ANN LTS PWR #1	P	A-1*	PILOT 3
OVHD ANN LTS PWR #1	P	C-1*	PILOT 3
OVHD ANN LTS PWR #2	P	A-2*	PILOT 3
OVHD ANN LTS PWR #2	P	C-2*	PILOT 3
OVHD ANN LTS PWR #3	P	A-3*	PILOT 3
OVHD ANN LTS PWR #3	P	C-3*	PILOT 3
R #2 IGN	P	J-9	PILOT 3
R FIRE DET LOOP A	P	J-6	PILOT 3
R T/R EMER STOW	P	L-7	PILOT 3
R T/REV CONTROL	P	J-7	PILOT 3
T/R EMER STOW	P	K-7	PILOT 3
TONE WARN #1	P	A-5	PILOT 3

* Depending on effectivity.

Continued on next page →

Essential DC Bus Circuit Breakers, ctd…

Circuit Breaker Name	Panel	Loc.	Control
COPILOT 1	**PDB**		
AOA PRB HTR #1	CP	L-14	COPILOT 1
BUS CONT #1	CP	K-2	COPILOT 1
BUS CONT #3	CP	M-2	COPILOT 1
CKPT VOICE RECORDER	CP	D-13	COPILOT 1*
COMB HYD PRESS	CPO	A-3	COPILOT 1
COMB HYD QTY	CPO	A-4	COPILOT 1
DAU #1A	CP	A-14	COPILOT 1
DBDI #1	CP	F-4*	COPILOT 1
DDRMI #1	CP	F-4*	COPILOT 1
DISPLAY UNIT #1	CP	E-6	COPILOT 1
FGC #1	CPO	A-7	COPILOT 1
FLT HYD PRESS	CPO	C-4	COPILOT 1
FWC #1	CP	A-13	COPILOT 1
IRU #1 DC SEC	CP	J-5	COPILOT 1
L HYD S/O	CPO	A-5	COPILOT 1
L NUTCRACKER	CPO	A-13	COPILOT 1
L PITOT HT CONT	CP	L-12	COPILOT 1
MANUAL FLAP CONT	CPO	A-1	COPILOT 1
SHAKER #1	CPO	A-10	COPILOT 1
STAB AUG SERVO #1	CPO	A-6	COPILOT 1
STALL BARR DUMP VALVE	CPO	A-8	COPILOT 1
STALL BARR VALVE #1	CPO	A-12	COPILOT 1
STALL BARRIER #1	CPO	A-9	COPILOT 1
STALL WARN CMPTR #1	CPO	A-11	COPILOT 1
STBY PITOT HT CONT	CP	L-13	COPILOT 1
SYM GEN #1	CP	K-3	COPILOT 1
UTILITY HYD PUMP OFF	CPO	C-3	COPILOT 1
COPILOT 2	**PDB**		
A/P SERVO #1	CPO	C-8	COPILOT 2
APPLIED BRAKE PRESS	CPO	D-6	COPILOT 2
AUX HYD PRESS	CPO	D-4	COPILOT 2
AUX HYD PUMP	CPO	D-5	COPILOT 2
BCS CHL #2	CPO	B-2	COPILOT 2
BUS CONT #2	CP	L-2	COPILOT 2
CVR SHUTDOWN	CP	E-13	COPILOT 2
DADC #1	CP	F-3	COPILOT 2
DAU #2B	CP	D-14	COPILOT 2
DBDI #2	CP	G-4*	COPILOT 2
DDRMI #2	CP	G-4*	COPILOT 2
DISPLAY CONT #1	CP	F-5	COPILOT 2
DISPLAY MASTER #2	CP	J-2	COPILOT 2
DISPLAY UNIT #3	CP	G-6	COPILOT 2
DISPLAYS FAN #1	CP	D-5	COPILOT 2*

* Depending on effectivity.

Continued on next page →

Essential DC Bus Circuit Breakers, ctd…

Circuit Breaker Name	Panel	Loc.	Control
COPILOT 2, ctd…	**PDB**		
DOOR CONT/WARN	CPO	B-8	COPILOT 2
FDR CONT #1	CP	C-8	COPILOT 2
FLAP CONT	CPO	B-1	COPILOT 2
FLT GDNC PNL #1	CPO	C-7	COPILOT 2
FLT HYD QTY	CPO	B-4	COPILOT 2
NAV/DME CONT # 1	CP	D-9	COPILOT 2
NUTCRACKER	CPO	B-13	COPILOT 2
R COWL A/I PRESS	CP	K-12	COPILOT 2
R COWL ANTI-ICE	CP	K-13	COPILOT 2
R HYD S/O	CPO	B-5	COPILOT 2
R NUTCRACKER	CPO	C-13	COPILOT 2
R WING ANTI-ICE	CP	K-14	COPILOT 2
RH RR FAN CONT	CP	I-1	COPILOT 2
STEER BY WIRE #1	CPO	C-12	COPILOT 2
UTILITY HYD PRESS	CPO	B-3	COPILOT 2
WHEEL BRK ACCUM PRESS	CPO	D-3	COPILOT 2
COPILOT 3	**PDB**		
ADF #1	CP	F-11	COPILOT 3
ADF CONT #1	CP	F-12	COPILOT 3
CDU #1	CP	D-7	COPILOT 3
CKPT AUDIO #2	CP	I-8	COPILOT 3
DAU #1B	CP	C-14	COPILOT 3
DAU #2A	CP	B-14	COPILOT 3
DME #1	CP	F-10	COPILOT 3
FWC #2	CP	B-13	COPILOT 3
G-METER	CP	C-13	COPILOT 3
L COWL A/I PRESS	CP	J-12	COPILOT 3
L COWL ANTI-ICE	CP	J-13	COPILOT 3
L WING ANTI-ICE	CP	J-14	COPILOT 3
L WSHLD WIPER	CP	J-11	COPILOT 3
L/H RR COOL FAN	CP	K-1	COPILOT 3
NAV CMPTR #1	CP	D-8	COPILOT 3
NAV RCVR #1	CP	F-9	COPILOT 3*
SMOKE DET	CP	E-14	COPILOT 3
ACCESS	**PDB**		
L CONV	**PDB**		
R CONV	**PDB**		
L MAIN BOOST PUMP	**PDB**		
R MAIN BOOST PUMP	**PDB**		
E INV	**PDB**		
EXT PWR	**PDB**		
TRU	**PDB**		

* Depending on effectivity.

Left Main DC Bus Circuit Breakers

Circuit Breaker Name	Panel	Loc.	Control
PILOT 1	**PDB**		
AC-BPCU PWR #1	PO	C-5	PILOT 1
ADC XFER	PO	D-15	PILOT 1
AFT PED PWR SUPPLY	P	E-3*	PILOT 1
AFT PED PWR SUPPLY #2	P	E-3*	PILOT 1
DC-BPCU PWR #1	PO	C-6	PILOT 1
FUEL PUMP LOGIC	PO	C-4	PILOT 1
L CONSOLE PWR SUPPLY	P	D-1	PILOT 1
L ENG IDLE	P	K-8	PILOT 1
L MAIN DC SENSE	P	H-14	PILOT 1
L MAIN DC VM	P	E-13	PILOT 1
PEDESTAL	P	A-8	PILOT 1
R CONSOLE PWR SUPPLY	P	E-1	PILOT 1
SIGN LTS	P	B-1*	PILOT 1
SIGN LTS	P	D-5*	PILOT 1
TAXI LTS CONT	P	C-9	PILOT 1
PILOT 2	**PDB**		
L CONSOLE FLOOD	P	A-10	PILOT 2
L ENG ACU SOL	P	J-11	PILOT 2
L LDG LT CONT	P	E-6*	PILOT 2
L LDG LT CONT	P	D-7*	PILOT 2
NAV/INSP LTS CONT	P	D-8	PILOT 2
OVHD/PED FLOOD LTS	P	A-9	PILOT 2
COPILOT 1	**PDB**		
A/T SERVO #1	CPO	C-9	COPILOT 1
DATA LOADER	CP	I-7	COPILOT 1
DISPLAY UNIT #5	CP	I-6	COPILOT 1
FLT HYD CONT	CPO	C-5	COPILOT 1
GND SPOILER	CPO	C-6	COPILOT 1
IRU #1 DC PRI	CP	K-5	COPILOT 1
RADIO ALTM #1	CP	I-4	COPILOT 1
W RDR CONT #1	CP	F-14	COPILOT 1
W RDR R/T	CP	F-13	COPILOT 1
COPILOT 2	**PDB**		
PERF #1	CPO	C-11	COPILOT 2
WHEELSPEED	CPO	C-10	COPILOT 2**
		**AFT E-BAT on HMAB airplanes	
COPILOT 3	**PDB**		
#1 HF MIC ADAPTOR	CP	F-8	COPILOT 3
AHRS DC	CP	M-5	COPILOT 3
EGPWS DC	CP	E-10	COPILOT 3
HF CONT #1	CP	D-12	COPILOT 3
HF RT CPLR #1	CP	D-11	COPILOT 3

* Depending on effectivity.

Continued on next page →

Left Main DC Bus Circuit Breakers, ctd…

Circuit Breaker Name	Panel	Loc.	Control
COPILOT 3, ctd…	**PDB**		
IRS BATT CHGR #1	CP	H-13	COPILOT 3
SYM GEN #3	CP	M-3	COPILOT 3
ACCESS	**PDB**		

Right Main DC Bus Circuit Breakers

Circuit Breaker Name	Panel	Loc.	Control
PILOT 1	**PDB**		
AC-BPCU PWR #2	PO	D-5	PILOT 1
AFT PED PWR SUPPLY #1	P	E-2	PILOT 1
ALT PUMP CONT	PO	D-4	PILOT 1
BOT A/C LT	P	D-6*	PILOT 1
BOT A/C LT	P	F-7*	PILOT 1
DC-BPCU PWR #2	PO	D-6	PILOT 1
ENG SYNC	P	K-9	PILOT 1
F E-BATT ALT PWR	P	J-14	PILOT 1
R ENG IDLE	P	L-8	PILOT 1
R FLT PNL/GSHLD	P	B-7	PILOT 1
WARN LTS PWR #9	P	G-4*	PILOT 1
WARN LTS PWR #9	P	G-5*	PILOT 1
PILOT 2	**PDB**		
A E-BAT ALT PWR	P	K-14	PILOT 2
CABIN TEMP CONT	PO	D-14	PILOT 2*
CAM DC (EVS)	CP AUX	A-6*	PILOT 2
COOL VLV (EVS)	CP AUX	D-6*	PILOT 2
HTR (EVS)	CP AUX	C-6*	PILOT 2
PROC (EVS)	CP AUX	B-5*	PILOT 2
R CONSOLE FLOOD	P	B-10	PILOT 2
R ENG ACU SOL	P	K-11	PILOT 2
R LDG LT CONT	P	F-7	PILOT 2
R MAIN DC SENSE	P	I-14	PILOT 2
R MAIN DC VM	P	F-13	PILOT 2
STROBE LTS CONT	P	E-7*	PILOT 2
STROBE LTS CONT	P	F-8*	PILOT 2
TONE WARN #2	P	B-5	PILOT 2
COPILOT 1	**PDB**		
A/P SERVO #2	CPO	D-8*	COPILOT 1
CDU #2	CP	E-7	COPILOT 1
DADC #2	CP	G-3	COPILOT 1
DISPLAY UNIT #2	CP	F-6	COPILOT 1
DISPLAY UNIT #6	CP	J-6	COPILOT 1
FGC #2	CPO	B-7	COPILOT 1

* Depending on effectivity.

Continued on next page →

Right Main DC Bus Circuit Breakers, ctd…

Circuit Breaker Name	Panel	Loc.	Control
COPILOT 1, ctd…	**PDB**		
FLT GDNC PNL #2	CPO	D-7	COPILOT 1
IRU #2 DC	CP	L-5	COPILOT 1
NAV CMPTR #2	CP	E-8	COPILOT 1
NAV/DME CONT # 2	CP	E-9	COPILOT 1
R PITOT HT CONT	CP	M-12	COPILOT 1
RADIO ALTM #2	CP	J-4	COPILOT 1
SPZ-8000 SHUTDN	CP	L-4	COPILOT 1
STAB AUG SERVO #2	CPO	B-6	COPILOT 1
STALL BARR VALVE #2	CPO	B-12	COPILOT 1
STALL WARN CMPTR #2	CPO	B-11	COPILOT 1
SYM GEN #2	CP	L-3	COPILOT 1
TOTAL TEMP VALVE	CP	M-10	COPILOT 1
W RDR CONT #2	CP	G-14	COPILOT 1
COPILOT 2	**PDB**		
A/T SERVO #2	CPO	D-9*	COPILOT 2
BTMS*	CP	D-10	COPILOT 2
HUD CMPTR	CP AUX	C-4*	COPILOT 2
HUD OVHD UNIT	CP AUX	D-4*	COPILOT 2
NOSE COMPT COOL VLV	CP	L-1	COPILOT 2
PERF #2	CPO	D-11	COPILOT 2
R WSHLD WIPER	CP	K-11	COPILOT 2
SHAKER #2	CPO	B-10	COPILOT 2
STALL BARRIER #2	CPO	B-9	COPILOT 2
STEER BY WIRE #2	CPO	D-12	COPILOT 2
COPILOT 3	**PDB**		
#2 HF MIC ADAPTOR	CP	G-8	COPILOT 3
ADF #2	CP	G-11	COPILOT 3
ADF CONT #2	CP	G-12	COPILOT 3
AOA PRB HTR #2	CP	M-14	COPILOT 3
DISPLAY CONT #2	CP	G-5	COPILOT 3
DISPLAY UNIT #4	CP	H-6	COPILOT 3
DISPLAYS FAN #2	CP	D-6	COPILOT 3*
DME #2	CP	G-10	COPILOT 3
HF CONT #2	CP	E-12	COPILOT 3
HF RT CPLR #2	CP	E-11	COPILOT 3
IRS BATT CHGR #2	CP	I-13	COPILOT 3
NAV RCVR #2	CP	G-9	COPILOT 3*
NOSE COMPT COOL FAN	CP	M-1	COPILOT 3
PED COOL FAN	CP	J-1	COPILOT 3
R STBY ENG INST	CP	B-11	COPILOT 3
TDR/CAD #2	CP	I-11*	COPILOT 3
TDR/CAD CONT #2	CP	I-12	COPILOT 3
VHF COMM #2	CP	I-9	COPILOT 3
VHF COMM CONT #2	CP	I-10	COPILOT 3
XPNDR #2	CP	I-11*	COPILOT 3

* Depending on effectivity.

Continued on next page →

Right Main DC Bus Circuit Breakers, ctd…

Circuit Breaker Name	Panel	Loc.	Control
ACCESS	**PDB**		
L ALTN BOOST PUMP	**PDB**		
R ALTN BOOST PUMP	**PDB**		

Essential AC Bus Circuit Breakers

Circuit Breaker Name	Panel	Loc.	Control
PILOT Φ A	**PDB**		
BLEED AIR ISO S/O V	PO	D-12	PILOT Φ A
CABIN PRESS 115V	PO	D-11	PILOT Φ A
ESS AC PH A VM	P	A-13	PILOT Φ A
L TEMP CONT AC	P	H-11	PILOT Φ A
R TEMP CONT AC	P	I-11	PILOT Φ A
PILOT Φ B	**PDB**		
ESS AC PH B VM	P	B-13	PILOT Φ B
PILOT Φ C	**PDB**		
ESS AC PH C VM	P	C-13	PILOT Φ C
COPILOT Φ A	**PDB**		
#1 26VAC XFMR	CP	A-10	COPILOT Φ A
#2 26 VAC XFMR	CP	B-10	COPILOT Φ A
CKPT VOICE RECORDER	CP	D-13	COPILOT Φ A*
DISPLAYS FAN #1	CP	D-5	COPILOT Φ A*
ELEC TRIM EXC #1	CPO	C-1	COPILOT Φ A
ELEC TRIM EXC #2	CPO	D-1	COPILOT Φ A
FDR/FDAU	CP	C-7	COPILOT Φ A
L ENG OIL PRESS	CP	A-12	COPILOT Φ A
L EPR 115V	CP	A-9	COPILOT Φ A
L PITOT HT PWR	CP	L-11	COPILOT Φ A
PLA EXC #1	CPO	C-2	COPILOT Φ A
PLA EXC #2	CPO	D-2	COPILOT Φ A
POSN SNSRS	CP	C-10	COPILOT Φ A
R EPR 115V	CP	B-9	COPILOT Φ A
STBY PITOT HT PWR	CP	M-13	COPILOT Φ A
R ENG OIL PRESS	CP	B-12	COPILOT Φ A
COPILOT Φ B	**PDB**		
ILS # 1	CP	I-3	COPILOT Φ B
COPILOT Φ C	**PDB**		
CKPT VOICE RECORDER	CP	D-13	COPILOT Φ C
ACCESS	**PDB**		

* Depending on effectivity.

Left Main AC Bus Circuit Breakers

Circuit Breaker Name	Panel	Loc.	Control
PILOT Φ A	**PDB**		
L LDG LT PWR	P	C-7	PILOT Φ A
L MAIN AC PH A VM	P	A-11	PILOT Φ A
NAV LTS	P	C-8*	PILOT Φ A
NAV LTS	P	E-8*	PILOT Φ A
NAV/INSP LTS XFMR	P	C-6*	PILOT Φ A
NAV/INSP LTS XFMR	P	C-8*	PILOT Φ A
WING INSP LTS	P	C-9*	PILOT Φ A
WING INSP LTS	P	E-9*	PILOT Φ A
PILOT Φ B	**PDB**		
L MAIN AC PH B VM	P	C-11	PILOT Φ B
PILOT Φ C	**PDB**		
L MAIN AC PH C VM	P	E-11	PILOT Φ C
COPILOT Φ A	**PDB**		
#1 HF COMM	CP	C-10*	COPILOT Φ A
ENG VIB MONITOR	CP	B-8	COPILOT Φ A
L SIDE PWR*	CP	J-10*	COPILOT Φ A*
L SIDE WSHLD*	CP	J-10*	COPILOT Φ A*
R FRONT PWR*	CP	L-8*	COPILOT Φ A*
R FRONT WSHLD*	CP	L-8*	COPILOT Φ A*
COPILOT Φ B	**PDB**		
#1 HF COMM	CP	C-11*	COPILOT Φ B*
AHRS AC	CP	M-6	COPILOT Φ B
R FRONT PWR*	CP	L-8*	COPILOT Φ B*
COPILOT Φ C	**PDB**		
#1 HF COMM	CP	C-12*	COPILOT Φ C*
EGPWS AC*	CP	D-10	COPILOT Φ C
IRU #1 AC	CP	K-6	COPILOT Φ C
TCAS	CP	D-11	COPILOT Φ C
ACCESS Φ A	**PDB**		
ACCESS Φ B	**PDB**		
ACCESS Φ C	**PDB**		
L BATT CHGR	**PDB**		

* Depending on effectivity.

Right Main AC Bus Circuit Breakers

Circuit Breaker Name	Panel	Loc.	Control
PILOT Φ A	**PDB**		
R MAIN AC PH A VM	P	B-11	PILOT Φ A
STROBE LTS	P	F-9*	PILOT Φ A
STROBE LTS	P	E-8*	PILOT Φ A
PILOT Φ B	**PDB**		
CTR TAXI LT PWR	P	D-10	PILOT Φ B
L TAXI LT PWR	P	C-10	PILOT Φ B*
R LDG LT PWR	P	D-7*	PILOT Φ B
R LDG LT PWR	P	E-7*	PILOT Φ B
R MAIN AC PH B VM	P	D-11	PILOT Φ B
R TAXI LT PWR	P	E-10	PILOT Φ B
TAXI LTS XFMR	P	D-6*	PILOT Φ B
TAXI LTS XFMR	P	F-10*	PILOT Φ B
PILOT Φ C	**PDB**		
BCN LTS	P	C-6*	PILOT Φ C
R MAIN AC PH C VM	P	F-11	PILOT Φ C
TOP A/C LT	P	C-6*	PILOT Φ C
TOP A/C LT	P	F-8*	PILOT Φ C
COPILOT Φ A	**PDB**		
#2 HF COMM	CP	E-10*	COPILOT Φ A*
CAM AC (EVS)	CP AUX	A-7*	COPILOT Φ A
R PITOT HT PWR	CP	M-11	COPILOT Φ A
COPILOT Φ B	**PDB**		
#2 HF COMM	CP	E-11*	COPILOT Φ B*
DISPLAYS FAN #2	CP	D-6	COPILOT Φ B*
ILS # 2	CP	J-3	COPILOT Φ B
L FRONT PWR*	CP	J-8*	COPILOT Φ B
L FRONT WSHLD*	CP	J-8*	COPILOT Φ B*
NOSE COMPT COOL FAN	CP	M-1	COPILOT Φ B*
TOTAL TEMP PROBE HTR	CP	L-10	COPILOT Φ B
COPILOT Φ C	**PDB**		
#2 HF COMM	CP	E-12*	COPILOT Φ C*
IRU #2 AC	CP	L-6	COPILOT Φ C
L FRONT PWR*	CP	J-8*	COPILOT Φ C
L FRONT WSHLD*	CP	J-8*	COPILOT Φ C*
LOGO LTS	P	C-5	COPILOT Φ C
R SIDE PWR*	CP	K-10	COPILOT Φ C
R SIDE WSHLD*	CP	K-10	COPILOT Φ C
RR ENG TEST	CP	G-13	COPILOT Φ C

* Depending on effectivity.

Continued on next page →

Right Main AC Bus Circuit Breakers, ctd…

Circuit Breaker Name	Panel	Loc.	Control
ACCESS Φ A	**PDB**		
ACCESS Φ B	**PDB**		
ACCESS Φ C	**PDB**		
R BATT CHGR	**PDB**		
TRU	**PDB**		

Battery Bus 1 Circuit Breakers

Circuit Breaker Name	Panel	Loc.	Bus
APU CONT	P	G-10*	BATT BUS 1*
APU PWR #1	P	J-10	BATT BUS 1
BATT #1 CONT	AUX PWR RLY BOX		BATT BUS 1
BATT #1 ON	PO	C-7	BATT BUS 1
BATT #1 VM	PO	C-8	BATT BUS 1
DISPLAY MASTER #1	CP	I-2	BATT BUS 1
EPMP #1 AFT	AUX PWR RLY BOX		BATT BUS 1
EPMP #1 DC	PO	C-9	BATT BUS 1
FDR CONT #2	CP	C-9	BATT BUS 1
NUTCRACKER BAT PWR**	CPO	D-13	BATT BUS 1

* Depending on effectivity. ** ASC 242

Battery Bus 2 Circuit Breakers

Circuit Breaker Name	Panel	Loc.	Bus
APU CONT	P	L-9*	BATT BUS 2*
APU PWR #2	P	K-10	BATT BUS 2
BATT #2 CONT	AUX PWR RLY BOX		BATT BUS 2
BATT #2 ON	PO	D-7	BATT BUS 2
BATT #2 VM	PO	D-8	BATT BUS 2
BATT AIR CIRCULATOR	AUX PWR RLY BOX		N/A
BATT PWR DC BPCU	PO	B-8	BATT BUS
EPMP #2 AFT	AUX PWR RLY BOX		BATT BUS 2
EPMP #2 DC	PO	D-9	BATT BUS 2

* Depending on effectivity.

Forward Emergency Battery Bus Circuit Breakers

Circuit Breaker Name	Panel	Loc.	Bus
AIU #1	CP	F-8	FWD E-BAT
BCS CHL #1	CPO	A-2	FWD E-BAT
CKPT AUDIO #1	CP	H-8	FWD E-BAT
CLOCK #1	CP	H-14	FWD E-BAT
E DBDI #1	CP	H-5	FWD E-BAT
E DDRMI #1	CP	H-5	FWD E-BAT
INBD ANTI-SKID	CPO	A-2	FWD E-BAT
NAV RCVR #1	CP	F-9	FWD E-BAT*
RTU #1	CP	F-7	FWD E-BAT
STBY ALTM VIB	CP	H-3*	FWD E-BAT
STBY ALTM VIB	CP	H-4*	FWD E-BAT
STBY PWR DISPLAY	P	I-12	FWD E-BAT
TDR/CAD #1	CP	H-11	FWD E-BAT
TDR/CAD CONT #1	CP	H-12	FWD E-BAT
VHF COMM #1	CP	H-9	FWD E-BAT
VHF COMM CONT #1	CP	H-10	FWD E-BAT
XPNDR #1	CP	H-11	FWD E-BAT

* Depending on effectivity.

Aft Emergency Battery Bus Circuit Breakers

Circuit Breaker Name	Panel	Loc.	Bus
CLOCK #2	CP	I-14	AFT E-BAT
E DBDI #2	CP	I-5	AFT E-BAT
E DDRMI #2	CP	I-5	AFT E-BAT
FLAP/STAB POS	CP	E-5	AFT E-BAT
L FUEL QTY	PO	C-1	AFT E-BAT
L STBY ENG INST	CP	A-11	AFT E-BAT
LDG GEAR POS IND	P	B-5*	AFT E-BAT
LDG GEAR POS IND	P	E-5*	AFT E-BAT
NAV RCVR #2	CP	G-9	AFT E-BAT*

* Depending on effectivity.

Continued on next page →

Aft Emergency Battery Bus Circuit Breakers, ctd…

Circuit Breaker Name	Panel	Loc.	Bus
OTBD ANTI-SKID	CPO	B-2	AFT E-BAT
R FUEL QTY	PO	D-1	AFT E-BAT
STBY ENG INSTR	P	B-8	AFT E-BAT
STBY HORZN	CP	E-4	AFT E-BAT
STBY INSTR	P	B-8	AFT E-BAT
WHEELSPEED	CPO	C-10	AFT E-BAT**

** L MAIN DC bus on Brake-By-Wire airplanes.

Miscellaneous Circuit Breakers

Circuit Breaker Name	Panel	Loc.	Bus
STBY DC VM	P	K-12	S E PWR DC
STBY AC VM	P	J-12	ST GEN RLY

Power Distribution Box Circuit Breakers

Essential DC Bus	L Main DC Bus	R Main DC Bus
PILOT 1	PILOT 1	PILOT 1
PILOT 2	PILOT 2	PILOT 2
PILOT 3	COPILOT 1	COPILOT 1
COPILOT 1	COPILOT 2	COPILOT 2
COPILOT 2	COPILOT 3	COPILOT 3
COPILOT 3	ACCESS	ACCESS
ACCESS		L ALTN BOOST PUMP
L CONV		R ALTN BOOST PUMP
R CONV		
TRU		
E INV		
EXT PWR		
L MAIN BOOST PUMP		
R MAIN BOOST PUMP		

Essential AC Bus	L Main AC Bus	R Main AC Bus
PILOT Φ A	PILOT Φ A	PILOT Φ A
PILOT Φ B	PILOT Φ B	PILOT Φ B
PILOT Φ C	PILOT Φ C	PILOT Φ C
COPILOT Φ A	COPILOT Φ A	COPILOT Φ A
COPILOT Φ B	COPILOT Φ B	COPILOT Φ B
COPILOT Φ C	COPILOT Φ C	COPILOT Φ C
ACCESS	ACCESS Φ A	ACCESS Φ A
BATT CHGR	ACCESS Φ B	ACCESS Φ B
	ACCESS Φ C	ACCESS Φ C
	L BATT CHGR	R BATT CHGR
		TRU

Warning Lights Power Circuit Breakers

Circuit Breaker	Panel	Loc.	Bus
WARN LTS PWR #1 Stall Barrier Cabin Pressure Control	P	F-1	ESS DC
WARN LTS PWR #2 Bleed Air Control Ground Spoilers	P	F-2	ESS DC
WARN LTS PWR #3 Electronic Display System AC Power DC Power Engine Start Engine Fire Detection Audible Tone Generator Cowl Anti Ice Wing Anti-Ice (SN 1129 & subs) Landing Gear Indication (SN 1096 & subs)	P	F-3	ESS DC
WARN LTS PWR #4 Left Thrust Reverser Door Warning and Control AFGCS Bleed Air Manual Pressure Indication Hydraulic Control	P	F-4	ESS DC
WARN LTS PWR #5 Fuel Low Level Fuel Quantity Engine Starting Speed Brake / Flap Alarm Wing Anti-Ice (SN 1000 - 1128)	P	F-5	ESS DC
WARN LTS PWR #6 Fuel Low Level Engine Starting Door Warning and Control Wing Anti-Ice (SN 1000 - 1128) Landing Gear Indication (SN 1000 - 1095)	P	G-1 or G-2*	ESS DC

* Depending on effectivity.

Continued on next page →

Warning Lights Power Circuit Breakers, ctd…

Circuit Breaker	Panel	Loc.	Bus
WARN LTS PWR #7	P	G-2 or G-3*	ESS DC
Audible Tone Generator			
Electronic Display System			
VHF Navigation			
Stall Barrier			
Engine Starting			
Engine Fire Protection			
Engine Idle Handling			
Cowl Anti-Ice			
Wing Anti-Ice (SN 1129 & subs)			
WARN LTS PWR #8	P	G-3 or G-4*	ESS DC
Transponder			
Bleed Air Manual Pressure Indication			
Engine Idle Handling			
Right Thrust Reverser			
AFGCS			
Ground Spoilers			
Airflow Control			
Equipment Overheat			
EICAS			
WARN LTS PWR #9	P	G-4 or G-5*	R MAIN DC
Ground Spoilers			
WARN LTS PWR #10	P	G-5 or H-3*	ESS DC
WARN LTS PWR #11	P	H-3 or H-4*	ESS DC
WARN LTS PWR #12	P	H-4 or H-5*	ESS DC
WARN LTS PWR #13	P	H-5 or I-4*	ESS DC
Equipment Overheat			
WARN LTS PWR #14	P	I-4 or I-5*	ESS DC
WARN LTS PWR #15	P	I-5 or J-5*	ESS DC
Hydraulic Control			
Cowl Anti-Ice			
Equipment Overheat			
Engine Overheat			
Oil Pressure Warning & Indication			
Fuel Pressure Warning			
Fuel Filter / Oil Filter Warning			

* Depending on effectivity.

Annunciator Lights Power Circuit Breakers

Circuit Breaker	Panel	Loc.	Bus
L CKPT ANN LTS PWR	P	A-2 or B-2*	ESS DC
Engine Idle Handling			
Thrust Reversers			
Ground Spoilers			
Cooling Fan			
FMS			
DADC			
EICAS			
AFGCS			
PED ANN LTS PWR	P	D-2*	ESS DC
Stall Barrier			
Landing Gear Nutcracker			
Speed Brake / Flap Alarm			
Engine Idle Handling			
Thrust Reversers			
Ground Spoilers			
Brake-By-Wire			
R CKPT ANN LTS PWR	P	B-2 or C-2*	ESS DC
FMS			
Thrust Reversers			
EICAS			
Cooling Fans			
Fuel Quantity			
OVHD ANN LTS PWR #1	P	A-1 or C-1*	ESS DC
Utility Lights			
Fire Extinguishing			
Power Source			
Bleed Air			
DC Power			
APU Fire Detection			
Engine Fire Detection			
Windshield Wipers			
Air Flow			
Fuel Control			
Windshield Heat			
Engine Starting			

* Depending on effectivity.

Continued on next page →

Annunciator Lights Power Circuit Breakers, ctd…

Circuit Breaker	Panel	Loc.	Bus
OVHD ANN LTS PWR #2	P	A-2 or C-2*	ESS DC
APU Fire Detection			
APU Control			
Hydraulic Control			
Fuel Control			
Engine Starting			
Cabin Pressure Control			
Stall Barrier			
Engine Fire Detection			
Exterior Lights			
Fuel Shutoff and Crossflow Control			
Cowl Anti-Ice			
OVHD ANN LTS PWR #3	P	A-3 or C-3*	ESS DC
APU Control			
Auxiliary Hydraulic Pump			
Wing Anti-Ice			
Pitot Heat			
TGT and Overtemperature Control			
Engine Fire Detection			
Engine Starting			
Power Source			
OVHD ANN LTS PWR #4	P	A-4 or C-4*	ESS DC
Pitot Heat			
Air Flow			
Engine Synchronization			
Electronic Display			
Exterior Lights			
Windshield Heat			
Landing and Taxi Lights			
OVHD ANN LTS PWR #5	P	A-5 or C-5*	ESS DC
Landing and Taxi Lights			
Sign Lights			
Windshield Wipers			
Engine Vibration Monitor			
Exterior Lights			
Windshield Heat			
Pitot Heat			

* Depending on effectivity.

Alphabetical List of Circuit Breakers

Circuit Breaker Name	Panel	Loc.	Bus
#1 26VAC XFMR	CP	A-10	ESS AC
#1 HF COMM	CP	C-10*	L MAIN AC
#1 HF COMM	CP	C-11*	L MAIN AC
#1 HF COMM	CP	C-12*	L MAIN AC
#1 HF MIC ADAPTOR	CP	F-8	L MAIN DC
#1 STANDBY WARN PWR	P	A-1	ESS DC
#2 26 VAC XFMR	CP	B-10	ESS AC
#2 HF COMM	CP	E-10*	R MAIN AC
#2 HF COMM	CP	E-11*	R MAIN AC
#2 HF COMM	CP	E-12*	R MAIN AC
#2 HF MIC ADAPTOR	CP	G-8	R MAIN DC
#2 STANDBY WARN PWR	P	B-1	ESS DC
A E-BAT ALT PWR	P	K-14	ESS DC
A/P SERVO #1	CPO	C-8	ESS DC
A/P SERVO #2	CPO	D-8	R MAIN DC
A/T SERVO #1	CPO	C-9	L MAIN DC
A/T SERVO #2	CPO	D-9	R MAIN DC
AC EXT PWR	PO	A-8	ESS DC
AC-BPCU PWR #1	PO	C-5	L MAIN DC
AC-BPCU PWR #2	PO	D-5	R MAIN DC
ACCESS	PDB	AC ESS	ESS AC
ACCESS	PDB	DC ESS	ESS DC
ADC XFER	PO	D-15	L MAIN DC
ADF #1	CP	F-11	ESS DC
ADF #2	CP	G-11	R MAIN DC
ADF CONT #1	CP	F-12	ESS DC
ADF CONT #2	CP	G-12	R MAIN DC
AFT EMER BATT	P	I-13	ESS DC
AFT IMPACT	P	K-13	ESS DC
AFT PED PWR SUPPLY	P	E-3*	L MAIN DC
AFT PED PWR SUPPLY #1	P	E-2	R MAIN DC
AFT PED PWR SUPPLY #2	P	E-3*	L MAIN DC
AHRS AC	CP	M-6	L MAIN AC
AHRS DC	CP	M-5	L MAIN DC
AIR INLET DOOR	PO	C-11	ESS DC
AIU #1	CP	F-8	FWD E-BAT
AIU #2	CP	G-8	ESS DC
ALT PUMP CONT	PO	D-4	R MAIN DC
ANN LTS CONT MAIN	P	A-3*	ESS DC
ANN LTS CONT MAIN	P	B-3*	ESS DC
ANN LTS CONT STBY	P	B-3*	ESS DC
ANN LTS CONT STBY	P	C-3*	ESS DC
AOA PRB HTR #1	CP	L-14	ESS DC
AOA PRB HTR #2	CP	M-14	R MAIN DC

* Depending on effectivity. Continued on next page →

Alphabetical List of Circuit Breakers. ctd…

Circuit Breaker Name	Panel	Loc.	Bus
APPLIED BRAKE PRESS	CPO	D-6	ESS DC
APU CONT	P	G-10*	BATT BUS 1
APU CONT	P	L-9*	BATT BUS 2
APU FIRE EXT	P	I-10	ESS DC
APU FIRE WARN	P	A-4*	ESS DC
APU FIRE WARN	P	B-4*	ESS DC
APU PWR #1	P	J-10	BATT BUS 1
APU PWR #2	P	K-10	BATT BUS 2
APU PWR #3	P	L-10	ESS DC
APU START	P	H-10	ESS DC
AUX HYD PRESS	CPO	D-4	ESS DC
AUX HYD PUMP	CPO	D-5	ESS DC
BACKUP CONT PWR	PO	B-7	ESS DC
BATT #1 CONT	AUX PWR RLY BOX		BATT BUS 1
BATT #1 ON	PO	C-7	BATT BUS 1
BATT #1 VM	PO	C-8	BATT BUS 1
BATT #2 CONT	AUX PWR RLY BOX		BATT BUS 2
BATT #2 ON	PO	D-7	BATT BUS 2
BATT #2 VM	PO	D-8	BATT BUS 2
BATT AIR CIRCULATOR	AUX PWR RLY BOX		N/A
BATT AMMETER	PO	A-7	ESS DC
BATT CHGR CONT	PO	A-6	ESS DC
BATT CHGR FAIL ANNUN	PO	B-6	ESS DC
BATT PWR DC BPCU	PO	B-8	BATT BUS
BCN LTS	P	C-6*	R MAIN AC
BCS CHL #1	CPO	A-2	FWD E-BAT
BCS CHL #2	CPO	B-2	ESS DC
BLEED AIR ISO S/O V	PO	D-12	ESS AC
BOT A/C LT	P	D-6*	R MAIN DC
BOT A/C LT	P	F-7*	R MAIN DC
BOT A/C LT GND OPER	P	E-6*	ESS DC
BOT A/C LT GND OPER	P	F-9*	ESS DC
BTMS*	CP	D-10	R MAIN DC
BUS CONT #1	CP	K-2	ESS DC
BUS CONT #2	CP	L-2	ESS DC
BUS CONT #3	CP	M-2	ESS DC
CABIN PRESS 115V	PO	D-11	ESS AC
CABIN PRESS 28V	PO	B-11	ESS DC
CABIN PRESS IND	PO	A-12	ESS DC
CABIN TEMP CONT	PO	D-14	R MAIN DC*
CAM AC (EVS)	CP AUX	A-7*	R MAIN AC
CAM DC (EVS)	CP AUX	A-6*	R MAIN DC
CDU #1	CP	D-7	ESS DC
CDU #2	CP	E-7	R MAIN DC

* Depending on effectivity. **Continued on next page →**

Alphabetical List of Circuit Breakers, ctd…

Circuit Breaker Name	Panel	Loc.	Bus
CKPT AUDIO #1	CP	H-8	FWD E-BAT
CKPT AUDIO #2	CP	I-8	ESS DC
CKPT TEMP CONT	PO	B-13	ESS DC
CKPT VOICE RECORDER	CP	D-13	ESS AC*
CKPT/CABIN TEMP IND	PO	A-11	ESS DC
CLOCK #1	CP	H-14	FWD E-BAT
CLOCK #2	CP	I-14	AFT E-BAT
COMB HYD PRESS	CPO	A-3	ESS DC
COMB HYD QTY	CPO	A-4	ESS DC
COOL VLV (EVS)	CP AUX	D-6*	R MAIN DC
COPILOT Φ A	PDB	AC ESS	ESS AC
COPILOT Φ B	PDB	AC ESS	ESS AC
COPILOT Φ C	PDB	AC ESS	ESS AC
COPILOT 1	PDB	DC ESS	ESS DC
COPILOT 2	PDB	DC ESS	ESS DC
COPILOT 3	PDB	DC ESS	ESS DC
CTR TAXI LT PWR	P	D-10	R MAIN AC
CVR SHUTDOWN	CP	E-13	ESS DC
DADC #1	CP	F-3	ESS DC
DADC #2	CP	G-3	R MAIN DC
DATA LOADER	CP	I-7	L MAIN DC
DAU #1A	CP	A-14	ESS DC
DAU #1B	CP	C-14	ESS DC
DAU #2A	CP	B-14	ESS DC
DAU #2B	CP	D-14	ESS DC
DBDI #1	CP	F-4	ESS DC
DBDI #2	CP	G-4	ESS DC
DC-BPCU PWR #1	PO	C-6	L MAIN DC
DC-BPCU PWR #2	PO	D-6	R MAIN DC
DDRMI #1	CP	F-4	ESS DC
DDRMI #2	CP	G-4	ESS DC
DISPLAY CONT #1	CP	F-5	ESS DC
DISPLAY CONT #2	CP	G-5	R MAIN DC
DISPLAYS FAN #1	CP	D-5	ESS DC*
DISPLAYS FAN #2	CP	D-6	R MAIN DC*
DISPLAY MASTER #1	CP	I-2	BATT BUS 1
DISPLAY MASTER #2	CP	J-2	ESS DC
DISPLAY UNIT #1	CP	E-6	ESS DC
DISPLAY UNIT #2	CP	F-6	R MAIN DC
DISPLAY UNIT #3	CP	G-6	ESS DC
DISPLAY UNIT #4	CP	H-6	R MAIN DC
DISPLAY UNIT #5	CP	I-6	L MAIN DC
DISPLAY UNIT #6	CP	J-6	R MAIN DC
DME #1	CP	F-10	ESS DC
DME #2	CP	G-10	R MAIN DC

* Depending on effectivity.

Continued on next page →

Alphabetical List of Circuit Breakers, ctd..

Circuit Breaker Name	Panel	Loc.	Bus
DOME LT	P	B-6	ESS DC
DOOR CONT/WARN	CPO	B-8	ESS DC
E DBDI #1	CP	H-5	ESS DC
E DBDI #2	CP	I-5	AFT E-BAT
E DDRMI #1	CP	H-5	FWD E-BAT
E DDRMI #2	CP	I-5	AFT E-BAT
EGPWS AC*	CP	D-10	L MAIN AC
EGPWS DC	CP	E-10	L MAIN DC
E INV	PDB	DC ESS	ESS DC
ELEC TRIM EXC #1	CPO	C-1	ESS AC
ELEC TRIM EXC #2	CPO	D-1	ESS AC
ELEV TRIM TAB ACTR HEAT	CP	L-9	L MAIN AC
ELWS #1	PO	A-9	ESS DC
ELWS #2	PO	B-9	ESS DC
ENG SYNC	P	K-9	R MAIN DC
ENG VIB MONITOR	CP	B-8	L MAIN AC
ENGINE OILER	P	G-10*	ESS DC
ENGINE OILER	P	L-9*	ESS DC
ENGINE START	P	K-6	ESS DC
EPMP #1 AFT	AUX PWR RLY BOX		BATT BUS 1
EPMP #2 AFT	AUX PWR RLY BOX		BATT BUS 2
EPMP #1 DC	PO	C-9	BATT BUS 1
EPMP #2 DC	PO	D-9	BATT BUS 2
EPMP SW PWR #1	PO	A-5	ESS DC
EPMP SW PWR #2	PO	B-5	ESS DC
ESS AC PH A VM	P	A-13	ESS AC
ESS AC PH B VM	P	B-13	ESS AC
ESS AC PH C VM	P	C-13	ESS AC
ESS DC VM	P	D-13	ESS DC
EXT PWR	PDB	DC ESS	ESS DC
F E-BATT ALT PWR	P	J-14	ESS DC
FDR CONT #1	CP	C-8	ESS DC
FDR CONT #2	CP	C-9	BATT BUS 1
FDR/FDAU	CP	C-7	ESS AC
FGC #1	CPO	A-7	ESS DC
FGC #2	CPO	B-7	R MAIN DC
FIRE BELL	P	B-4*	ESS DC
FIRE BELL	P	B-5*	ESS DC
FIRE BELL	P	C-4*	ESS DC
FIRE EXT SHOT #1	P	G-8	ESS DC
FIRE EXT SHOT #2	P	H-8	ESS DC
FLAP CONT	CPO	B-1	ESS DC
FLAP POS	CP	K-4	ESS DC
FLAP/STAB POS	CP	E-5	AFT E-BAT

* Depending on effectivity.

Continued on next page →

Alphabetical List of Circuit Breakers, ctd..

Circuit Breaker Name	Panel	Loc.	Bus
FLAP/STAB WARN	P	D-3	ESS DC
FLOOD LTS OVERRIDE	P	A-6	ESS DC
FLT GDNC PNL #1	CPO	C-7	ESS DC
FLT GDNC PNL #2	CPO	D-7	R MAIN DC
FLT HYD CONT	CPO	C-5	L MAIN DC
FLT HYD PRESS	CPO	C-4	ESS DC
FLT HYD QTY	CPO	B-4	ESS DC
FUEL INTERTANK V	PO	B-4	ESS DC
FUEL LOW LEVEL	PO	B-1	ESS DC
FUEL PUMP IND	PO	A-4	ESS DC
FUEL PUMP LOGIC	PO	C-4	L MAIN DC
FUEL X FLOW V	PO	D-2	ESS DC
FWC #1	CP	A-13	ESS DC
FWC #2	CP	B-13	ESS DC
FWD EMER BATT	P	H-13	ESS DC
FWD IMPACT	P	J-13	ESS DC
G-METER	CP	C-13	ESS DC
GND SPOILER	CPO	C-6	L MAIN DC
GPS #1	CP	D-9	ESS DC
GPS #2	CP	E-9	R MAIN DC
HF CONT #1	CP	D-12	L MAIN DC
HF CONT #2	CP	E-12	R MAIN DC
HF RT CPLR #1	CP	D-11	L MAIN DC
HF RT CPLR #2	CP	E-11	R MAIN DC
HTR (EVS)	CP AUX	C-6*	R MAIN DC
HUD CMPTR	CP AUX	C-4*	R MAIN DC
HUD OVHD UNIT	CP AUX	D-4*	R MAIN DC
ILS # 1	CP	I-3	ESS AC
ILS # 2	CP	J-3	ESS AC
INBD ANTI-SKID	CPO	A-2	FWD E-BAT
IRS BATT CHGR #1	CP	H-13	L MAIN DC
IRS BATT CHGR #2	CP	I-13	R MAIN DC
IRU #1 AC	CP	K-6	L MAIN AC
IRU #1 DC PRI	CP	K-5	L MAIN DC
IRU #1 DC SEC	CP	J-5	ESS DC
IRU #2 AC	CP	L-6	R MAIN AC
IRU #2 DC	CP	L-5	R MAIN DC
L #1 IGN	P	I-8	ESS DC
L #2 IGN	P	J-8	ESS DC
L AIR COND	PO	C-13	ESS DC
L ALTN BOOST PUMP	PDB	R DC	R MAIN DC
L BATT CHGR	PDB	L AC	L MAIN AC

* Depending on effectivity.

Continued on next page →

Alphabetical List of Circuit Breakers, ctd..

Circuit Breaker Name	Panel	Loc.	Bus
L BLEED AIR	PO	A-10	ESS DC
L BLEED AIR IND	PO	B-12	ESS DC
L CKPT ANN LTS PWR	P	A-2*	ESS DC
L CKPT ANN LTS PWR	P	B-2*	ESS DC
L CONSOLE FLOOD	P	A-10	L MAIN DC
L CONSOLE PWR SUPPLY	P	D-1	L MAIN DC
L CONV	PDB	DC ESS	ESS DC
L COWL A/I PRESS	CP	J-12	ESS DC
L COWL ANTI-ICE	CP	J-13	ESS DC
L ENG ACU SOL	P	J-11	L MAIN DC
L ENG IDLE	P	K-8	L MAIN DC
L ENG O'HT	P	G-9	ESS DC
L ENG OIL PRESS	CP	A-12	ESS AC
L EPR 115V	CP	A-9	ESS AC
L FIRE DET LOOP A	P	I-6	ESS DC
L FIRE DET LOOP B	P	G-6	ESS DC
L FLT PNL/GSHLD	P	A-7	ESS DC
L FRONT PWR*	CP	J-8	R MAIN AC
L FRONT WSHLD*	CP	J-8	R MAIN AC
L FUEL QTY	PO	C-1	AFT E-BAT
L FUEL S/O	PO	A-2	ESS DC
L FUELING S/O	PO	A-3	ESS DC
L HYD S/O	CPO	A-5	ESS DC
L LDG LT CONT	P	E-6*	L MAIN DC
L LDG LT CONT	P	D-7*	L MAIN DC
L LDG LT PWR	P	C-7	L MAIN AC
L MAIN AC PH A VM	P	A-11	L MAIN AC
L MAIN AC PH B VM	P	C-11	L MAIN AC
L MAIN AC PH C VM	P	E-11	L MAIN AC
L MAIN BOOST PUMP	PDB	DC ESS	ESS DC
L MAIN DC SENSE	P	H-14	L MAIN DC
L MAIN DC VM	P	E-13	L MAIN DC
L NUTCRACKER	CPO	A-13	ESS DC
L PITOT HT CONT	CP	L-12	ESS DC
L PITOT HT PWR	CP	L-11	ESS AC
L SEC LOCK	P	G-7	ESS DC
L SIDE PWR*	CP	J-10	L MAIN AC
L SIDE WSHLD*	CP	J-10	L MAIN AC
L STBY ENG INST	CP	A-11	AFT E-BAT
L T/R EMER STOW	P	K-7*	ESS DC
L T/R EMER STOW	P	L-7*	ESS DC
L T/REV CONTROL	P	I-7	ESS DC
L TAXI LT PWR	P	C-10	R MAIN AC
L TEMP CONT AC	P	H-11	ESS AC
L WING ANTI-ICE	CP	J-14	ESS DC
L WSHLD WIPER	CP	J-11	ESS DC

* Depending on effectivity.

Continued on next page →

Alphabetical List of Circuit Breakers, ctd..

Circuit Breaker Name	Panel	Loc.	Bus
L/H RR COOL FAN	CP	K-1	ESS DC
LDG GEAR POS IND	P	B-5*	AFT E-BAT
LDG GEAR POS IND	P	E-5*	AFT E-BAT
LDG WARN HORN	P	E-4	ESS DC
LOGO LTS	P	C-5	R MAIN AC
MAIN PUMP CONT	PO	A-1	ESS DC
MANUAL FLAP CONT	CPO	A-1	ESS DC
NAV CMPTR #1	CP	D-8	ESS DC
NAV CMPTR #2	CP	E-8	R MAIN DC
NAV LTS	P	C-8*	L MAIN AC
NAV LTS	P	E-8*	L MAIN AC
NAV RCVR #1	CP	F-9	FWD E-BAT*
NAV RCVR #2	CP	G-9	AFT E-BAT*
NAV/DME CONT # 1	CP	D-9	ESS DC
NAV/DME CONT # 2	CP	E-9	R MAIN DC
NAV/INSP LTS CONT	P	D-8	L MAIN DC
NAV/INSP LTS XFMR	P	C-6*	L MAIN AC
NAV/INSP LTS XFMR	P	C-8*	L MAIN AC
NOSE COMPT COOL FAN	CP	M-1	R MAIN DC*
NOSE COMPT COOL VLV	CP	L-1	R MAIN DC
NUTCRACKER	CPO	B-13	ESS DC
NUTCRACKER BAT PWR**	CPO	D-13	BATT BUS 1
OTBD ANTI-SKID	CPO	B-2	AFT E-BAT
OVHD ANN LTS PWR #1	P	A-1*	ESS DC
OVHD ANN LTS PWR #1	P	C-1*	ESS DC
OVHD ANN LTS PWR #2	P	A-2*	ESS DC
OVHD ANN LTS PWR #2	P	C-2*	ESS DC
OVHD ANN LTS PWR #3	P	A-3*	ESS DC
OVHD ANN LTS PWR #3	P	C-3*	ESS DC
OVHD ANN LTS PWR #4	P	A-4*	ESS DC
OVHD ANN LTS PWR #4	P	C-4*	ESS DC
OVHD ANN LTS PWR #5	P	A-5*	ESS DC
OVHD ANN LTS PWR #5	P	C-5*	ESS DC
OVHD PNL PRI	P	B-9	ESS DC
OVHD/PED FLOOD LTS	P	A-9	L MAIN DC
PED ANN LTS PWR	P	D-2	ESS DC
PED COOL FAN	CP	J-1	R MAIN DC
PEDESTAL	P	A-8	L MAIN DC
PERF #1	CPO	C-11	L MAIN DC
PERF #2	CPO	D-11	R MAIN DC
PILOT Φ A	PDB	AC ESS	ESS AC
PILOT Φ B	PDB	AC ESS	ESS AC

* Depending on effectivity. ** ASC 242 **Continued on next page →**

Alphabetical List of Circuit Breakers, ctd..

Circuit Breaker Name	Panel	Loc.	Bus
PILOT Φ C	PDB	AC ESS	ESS AC
PILOT 1	PDB	DC ESS	ESS DC
PILOT 2	PDB	DC ESS	ESS DC
PILOT 3	PDB	DC ESS	ESS DC
PLA EXC #1	CPO	C-2	ESS AC
PLA EXC #2	CPO	D-2	ESS AC
POSN SNSRS	CP	C-10	ESS AC
PROC (EVS)	CP AUX	B-6*	R MAIN DC
PYLON LT	P	D-5	ESS AC
R #1 IGN	P	I-9	ESS DC
R #2 IGN	P	J-9	ESS DC
R AIR COND	PO	D-13	ESS DC
R ALTN BOOST PUMP	PDB	R DC	R MAIN DC
R BATT CHGR	PDB	L AC	R MAIN AC
R BLEED AIR	PO	B-10	ESS DC
R BLEED AIR IND	PO	C-12	ESS DC
R CKPT ANN LTS PWR	P	B-2*	ESS DC
R CKPT ANN LTS PWR	P	C-2*	ESS DC
R CONSOLE FLOOD	P	B-10	R MAIN DC
R CONSOLE PWR SUPPLY	P	E-1	L MAIN DC
R CONV	PDB	DC ESS	ESS DC
R COWL A/I PRESS	CP	K-12	ESS DC
R COWL ANTI-ICE	CP	K-13	R MAIN DC
R ENG ACU SOL	P	K-11	R MAIN DC
R ENG IDLE	P	L-8	R MAIN DC
R ENG O'HT	P	H-9	R MAIN DC
R ENG OIL PRESS	CP	B-12	ESS AC
R EPR 115V	CP	B-9	ESS AC
R FIRE DET LOOP A	P	J-6	ESS DC
R FIRE DET LOOP B	P	H-6	ESS DC
R FLT PNL/GSHLD	P	B-7	R MAIN DC
R FUEL S/O	PO	B-2	ESS DC
R FUELING S/O	PO	B-3	ESS DC
R FUEL QTY	PO	D-1	AFT E-BAT
R FRONT PWR*	CP	L-8	L MAIN AC
R FRONT WSHLD*	CP	L-8	L MAIN AC
R HYD S/O	CPO	B-5	ESS DC
R LDG LT CONT	P	F-7	R MAIN DC
R LDG LT PWR	P	D-7*	R MAIN AC
R LDG LT PWR	P	E-7*	R MAIN AC
R MAIN AC PH A VM	P	B-11	R MAIN AC
R MAIN AC PH B VM	P	D-11	R MAIN AC
R MAIN AC PH C VM	P	F-11	R MAIN AC
R MAIN BOOST PUMP	PDB	DC ESS	ESS DC
R MAIN DC SENSE	P	I-14	R MAIN DC

* Depending on effectivity.

Continued on next page →

Alphabetical List of Circuit Breakers, ctd..

Circuit Breaker Name	Panel	Loc.	Bus
R MAIN DC VM	P	F-13	R MAIN DC
R NUTCRACKER	CPO	C-13	ESS DC
R PITOT HT CONT	CP	M-12	R MAIN DC
R PITOT HT PWR	CP	M-11	R MAIN AC
R SEC LOCK	P	H-7	ESS DC
R SIDE PWR*	CP	K-10	R MAIN AC
R SIDE WSHLD*	CP	K-10	R MAIN AC
R STBY ENG INST	CP	B-11	R MAIN DC
R T/R EMER STOW	P	L-7	ESS DC
R TAXI LT PWR	P	E-10	R MAIN AC
R TEMP CONT AC	P	I-11	ESS AC
R WING ANTI-ICE	CP	K-14	ESS DC
R WSHLD WIPER	CP	K-11	R MAIN DC
RADIO ALTM #1	CP	I-4	L MAIN DC
RADIO ALTM #2	CP	J-4	R MAIN DC
RADIO RACK COOLING DC	CP	I-1	ESS DC
RH RR COOL FAN	CP	H-2	ESS DC
RH RR FAN CONT	CP	I-1	ESS DC
RR ENG TEST	CP	G-13	R MAIN AC
RTU #1	CP	F-7	FWD E-BAT
RTU #2	CP	G-7	ESS DC
SGL PACK	PO	C-14	ESS DC
SHAKER #1	CPO	A-10	ESS DC
SHAKER #2	CPO	B-10	R MAIN DC
SIGN LTS	P	B-1*	L MAIN DC
SIGN LTS	P	D-5*	L MAIN DC
SMOKE DET	CP	E-14	ESS DC
SPD BRAKE/FLAP ALARM	P	D-4	ESS DC
SPZ-8000 SHUTDN	CP	L-4	R MAIN DC
STAB AUG SERVO #1	CPO	A-6	ESS DC
STAB AUG SERVO #2	CPO	B-6	R MAIN DC
STALL BARR DUMP VALVE	CPO	A-8	ESS DC
STALL BARR VALVE #1	CPO	A-12	ESS DC
STALL BARR VALVE #2	CPO	B-12	R MAIN DC
STALL BARRIER #1	CPO	A-9	ESS DC
STALL BARRIER #2	CPO	B-9	R MAIN DC
STALL WARN CMPTR #1	CPO	A-11	ESS DC
STALL WARN CMPTR #2	CPO	B-11	R MAIN DC
STBY AC VM	P	J-12	ST GEN RLY
STBY ALTM VIB	CP	H-3*	FWD E-BAT
STBY ALTM VIB	CP	H-4*	FWD E-BAT
STBY DC VM	P	K-12	S E PWR DC
STBY ENG INSTR	P	B-8	AFT E-BAT
STBY HORZN	CP	E-4	AFT E-BAT
STBY INSTR	P	B-8	AFT E-BAT

* Depending on effectivity.

Continued on next page →

Alphabetical List of Circuit Breakers, ctd..

Circuit Breaker Name	Panel	Loc.	Bus
STBY PWR DISPLAY	P	I-12	FWD E-BAT
STBY PITOT HT CONT	CP	L-13	ESS DC
STBY PITOT HT PWR	CP	M-13	ESS AC
STBY PWR CONT	P	H-12	ESS DC
STEER BY WIRE #1	CPO	C-12	ESS DC
STEER BY WIRE #2	CPO	D-12	R MAIN DC
STROBE LTS	P	E-8*	R MAIN AC
STROBE LTS	P	F-9*	R MAIN AC
STROBE LTS CONT	P	E-7*	R MAIN DC
STROBE LTS CONT	P	F-8*	R MAIN DC
SYM GEN #1	CP	K-3	ESS DC
SYM GEN #2	CP	L-3	R MAIN DC
SYM GEN #3	CP	M-3	L MAIN DC
T/R EMER STOW	P	K-7	ESS DC
TAXI LTS CONT	P	C-9	L MAIN DC
TAXI LTS XFMR	P	D-6*	R MAIN AC
TAXI LTS XFMR	P	F-10*	R MAIN AC
TCAS	CP	D-11	L MAIN AC
TDR/CAD #1	CP	H-11	FWD E-BAT
TDR/CAD #2	CP	I-11	R MAIN DC
TDR/CAD CONT #1	CP	H-12	FWD E-BAT
TDR/CAD CONT #2	CP	I-12	R MAIN DC
TONE WARN #1	P	A-5	ESS DC
TONE WARN #2	P	B-5	R MAIN DC
TOP A/C LT	P	C-6*	R MAIN AC
TOP A/C LT	P	F-8*	R MAIN AC
TOTAL TEMP PROBE HTR	CP	L-10	R MAIN AC
TOTAL TEMP VALVE	CP	M-10	R MAIN DC
TRU	PDB	AC RT	R MAIN AC
TRU	PDB	DC ESS	ESS DC
UTILITY HYD PRESS	CPO	B-3	ESS DC
UTILITY HYD PUMP OFF	CPO	C-3	ESS DC
UTILITY LTS	P	D-9*	ESS DC
UTILITY LTS	P	E-9*	ESS DC
VHF COMM #1	CP	H-9	FWD E-BAT
VHF COMM #2	CP	I-9	R MAIN DC
VHF COMM CONT #1	CP	H-10	FWD E-BAT
VHF COMM CONT #2	CP	I-10	R MAIN DC
W RDR CONT #1	CP	F-14	L MAIN DC
W RDR CONT #2	CP	G-14	R MAIN DC
W RDR R/T	CP	F-13	L MAIN DC

* Depending on effectivity.

Continued on next page →

Alphabetical List of Circuit Breakers, ctd..

Circuit Breaker Name	Panel	Loc.	Bus
WARN LTS PWR #1	P	F-1	ESS DC
WARN LTS PWR #2	P	F-2	ESS DC
WARN LTS PWR #3	P	F-3	ESS DC
WARN LTS PWR #4	P	F-4	ESS DC
WARN LTS PWR #5	P	F-5	ESS DC
WARN LTS PWR #6	P	G-1*	ESS DC
WARN LTS PWR #6	P	G-2*	ESS DC
WARN LTS PWR #7	P	G-2*	ESS DC
WARN LTS PWR #7	P	G-3*	ESS DC
WARN LTS PWR #8	P	G-3*	ESS DC
WARN LTS PWR #8	P	G-4*	ESS DC
WARN LTS PWR #9	P	G-4*	R MAIN DC
WARN LTS PWR #9	P	G-5*	R MAIN DC
WARN LTS PWR #10	P	G-5*	ESS DC
WARN LTS PWR #10	P	H-3*	ESS DC
WARN LTS PWR #11	P	H-3*	ESS DC
WARN LTS PWR #11	P	H-4*	ESS DC
WARN LTS PWR #12	P	H-4*	ESS DC
WARN LTS PWR #12	P	H-5*	ESS DC
WARN LTS PWR #13	P	H-5*	ESS DC
WARN LTS PWR #13	P	I-4*	ESS DC
WARN LTS PWR #14	P	I-4*	ESS DC
WARN LTS PWR #14	P	I-5*	ESS DC
WARN LTS PWR #15	P	I-5*	ESS DC
WARN LTS PWR #15	P	J-5*	ESS DC
WARN LTS TEST	P	B-4*	ESS DC
WARN LTS TEST	P	J-5*	ESS DC
WHEEL BRK ACCUM PRESS	CPO	D-3	ESS DC
WHEEL WELL LTS	P	F-6*	ESS DC
WHEEL WELL LTS	P	F-10*	ESS DC
WHEELSPEED	CPO	C-10	ESS DC**
WING INSP LTS	P	C-9*	L MAIN AC
WING INSP LTS	P	E-9*	L MAIN AC
XPNDR #1	CP	H-11	FWD E-BAT
XPNDR #2	CP	I-11	R MAIN DC

* Depending on effectivity. ** L MAIN DC bus on Brake-By-Wire airplanes.

Air Conditioning System Circuit Breakers – ATA 21

Circuit Breaker Name	Panel	Loc.	Bus
ADC XFER	PO	D-15	L MAIN DC
CABIN PRESS 115V	PO	D-11	ESS AC
CABIN PRESS 28V	PO	B-11	ESS DC
CABIN PRESS IND	PO	A-12	ESS DC
CABIN TEMP CONT	PO	D-14	R MAIN DC*
CKPT TEMP CONT	PO	B-13	ESS DC
CKPT/CABIN TEMP IND	PO	A-11	ESS DC
DISPLAYS FAN #1	CP	D-5	ESS DC*
DISPLAYS FAN #2	CP	D-6	R MAIN DC*
L AIR COND	PO	C-13	ESS DC
L/H RR COOL FAN	CP	K-1	ESS DC
NOSE COMPT COOL FAN	CP	M-1	R MAIN DC*
NOSE COMPT COOL VLV	CP	L-1	R MAIN DC
PED COOL FAN	CP	J-1	R MAIN DC
R AIR COND	PO	D-13	ESS DC
RH RR COOL FAN	CP	H-2	ESS DC
RH RR FAN CONT	CP	I-1	ESS DC
SGL PACK	PO	C-14	ESS DC

Autoflight System Circuit Breakers – ATA 22

Circuit Breaker Name	Panel	Loc.	Bus
A/P SERVO #1	CPO	C-8	ESS DC
A/P SERVO #2	CPO	D-8	R MAIN DC
A/T SERVO #1	CPO	C-9	L MAIN DC
A/T SERVO #2	CPO	D-9	R MAIN DC
ELEC TRIM EXC #1	CPO	C-1	ESS AC
ELEC TRIM EXC #2	CPO	D-1	ESS AC
FGC #1	CPO	A-7	ESS DC
FGC #2	CPO	B-7	R MAIN DC
FLT GDNC PNL #1	CPO	C-7	ESS DC
FLT GDNC PNL #2	CPO	D-7	R MAIN DC
PERF #1	CPO	C-11	L MAIN DC
PERF #2	CPO	D-11	R MAIN DC
PLA EXC #1	CPO	C-2	ESS AC
PLA EXC #2	CPO	D-2	ESS AC
STAB AUG SERVO #1	CPO	A-6	ESS DC
STAB AUG SERVO #2	CPO	B-6	R MAIN DC

Communications System Circuit Breakers – ATA 23

Circuit Breaker Name	Panel	Loc.	Bus
#1 HF COMM	CP	C-10*	L MAIN AC
#1 HF COMM	CP	C-11*	L MAIN AC
#1 HF COMM	CP	C-12*	L MAIN AC
#1 HF MIC ADAPTOR	CP	F-8	L MAIN DC
#2 HF COMM	CP	E-10*	R MAIN AC
#2 HF COMM	CP	E-11*	R MAIN AC
#2 HF COMM	CP	E-12*	R MAIN AC
#2 HF MIC ADAPTOR	CP	G-8	R MAIN DC
AIU #1	CP	F-8	FWD E-BAT
AIU #2	CP	G-8	ESS DC
CKPT AUDIO #1	CP	H-8	FWD E-BAT
CKPT AUDIO #2	CP	I-8	ESS DC
CKPT VOICE RECORDER	CP	D-13	ESS AC*
CVR SHUTDOWN	CP	E-13	ESS DC
HF CONT #1	CP	D-12	L MAIN DC
HF CONT #2	CP	E-12	R MAIN DC
HF RT CPLR #1	CP	D-11	L MAIN DC
HF RT CPLR #2	CP	E-11	R MAIN DC
RTU #1	CP	F-7	FWD E-BAT
RTU #2	CP	G-7	ESS DC
VHF COMM #1	CP	H-9	FWD E-BAT
VHF COMM #2	CP	I-9	R MAIN DC
VHF COMM CONT #1	CP	H-10	FWD E-BAT
VHF COMM CONT #2	CP	I-10	R MAIN DC

Electrical Power System Circuit Breakers – ATA 24

Circuit Breaker Name	Panel	Loc.	Bus
ACCESS	PDB	AC ESS	ESS AC
ACCESS	PDB	DC ESS	ESS DC
#1 26VAC XFMR	CP	A-10	ESS AC
#2 26 VAC XFMR	CP	B-10	ESS AC
A E-BAT ALT PWR	P	K-14	ESS DC
AC EXT PWR	PO	A-8	ESS DC
AFT EMER BATT	P	I-13	ESS DC
AFT IMPACT	P	K-13	ESS DC
BACKUP CONT PWR	PO	B-7	ESS DC
BATT AMMETER	PO	A-7	ESS DC
BATT CHGR CONT	PO	A-6	ESS DC
BATT CHGR FAIL ANNUN	PO	B-6	ESS DC
E INV	PDB	DC ESS	ESS DC
EXT PWR	PDB	DC ESS	ESS DC
EPMP SW PWR #1	PO	A-5	ESS DC
EPMP SW PWR #2	PO	B-5	ESS DC
ESS AC PH A VM	P	A-13	ESS AC

ESS AC PH B VM	P	B-13	ESS AC
ESS AC PH C VM	P	C-13	ESS AC
ESS DC VM	P	D-13	ESS DC
F E-BATT ALT PWR	P	J-14	ESS DC
FWD EMER BATT	P	H-13	ESS DC
FWD IMPACT	P	J-13	ESS DC
L CONV	PDB	DC ESS	ESS DC
R CONV	PDB	DC ESS	ESS DC
STBY PWR CONT	P	H-12	ESS DC

Left Main AC Bus:

Circuit Breaker Name	Panel	Loc.	Bus
L BATT CHGR	PDB	L AC	L MAIN AC
L MAIN AC PH A VM	P	A-11	L MAIN AC
L MAIN AC PH B VM	P	C-11	L MAIN AC
L MAIN AC PH C VM	P	E-11	L MAIN AC
NAV/INSP LTS XFMR	P	C-6*	L MAIN AC
NAV/INSP LTS XFMR	P	C-8*	L MAIN AC

Right Main AC Bus:

Circuit Breaker Name	Panel	Loc.	Bus
R BATT CHGR	PDB	L AC	R MAIN AC
R MAIN AC PH A VM	P	B-11	R MAIN AC
R MAIN AC PH B VM	P	D-11	R MAIN AC
R MAIN AC PH C VM	P	F-11	R MAIN AC
TAXI LTS XFMR	P	D-6*	R MAIN AC
TAXI LTS XFMR	P	F-10*	R MAIN AC
TRU	PDB	AC RT	R MAIN AC

Left Main DC Bus:

Circuit Breaker Name	Panel	Loc.	Bus
AC-BPCU PWR #1	PO	C-5	L MAIN DC
DC-BPCU PWR #1	PO	C-6	L MAIN DC
L MAIN DC SENSE	P	H-14	L MAIN DC
L MAIN DC VM	P	E-13	L MAIN DC

Right Main DC Bus:

Circuit Breaker Name	Panel	Loc.	Bus
AC-BPCU PWR #2	PO	D-5	R MAIN DC
DC-BPCU PWR #2	PO	D-6	R MAIN DC
R MAIN DC SENSE	P	I-14	R MAIN DC
R MAIN DC VM	P	F-13	R MAIN DC

Essential AC Bus:

Circuit Breaker Name	Panel	Loc.	Bus
COPILOT Φ A	PDB	AC ESS	ESS AC
COPILOT Φ B	PDB	AC ESS	ESS AC
COPILOT Φ C	PDB	AC ESS	ESS AC
PILOT Φ A	PDB	AC ESS	ESS AC
PILOT Φ B	PDB	AC ESS	ESS AC
PILOT Φ C	PDB	AC ESS	ESS AC

Essential DC Bus:

Circuit Breaker Name	Panel	Loc.	Bus
COPILOT 1	PDB	DC ESS	ESS DC
COPILOT 2	PDB	DC ESS	ESS DC
COPILOT 3	PDB	DC ESS	ESS DC
PILOT 1	PDB	DC ESS	ESS DC
PILOT 2	PDB	DC ESS	ESS DC
PILOT 3	PDB	DC ESS	ESS DC
TRU	PDB	DC ESS	ESS DC

Fire Protection System Circuit Breakers – ATA 26

Circuit Breaker Name	Panel	Loc.	Bus
APU FIRE EXT	P	I-10	ESS DC
APU FIRE WARN	P	A-4*	ESS DC
APU FIRE WARN	P	B-4*	ESS DC
FIRE BELL	P	B-4*	ESS DC
FIRE BELL	P	B-5*	ESS DC
FIRE BELL	P	C-4*	ESS DC
FIRE EXT SHOT #1	P	G-8	ESS DC
FIRE EXT SHOT #2	P	H-8	ESS DC
L ENG O'HT	P	G-9	ESS DC
L FIRE DET LOOP A	P	I-6	ESS DC
L FIRE DET LOOP B	P	G-6	ESS DC
R ENG O'HT	P	H-9	R MAIN DC
R FIRE DET LOOP A	P	J-6	ESS DC
R FIRE DET LOOP B	P	H-6	ESS DC
SMOKE DET	CP	E-14	ESS DC

Flight Controls' System Circuit Breakers – ATA 27

Circuit Breaker Name	Panel	Loc.	Bus
AOA PRB HTR #1	CP	L-14	ESS DC
AOA PRB HTR #2	CP	M-14	R MAIN DC
ELEV TRIM TAB ACTR HEAT	CP	L-9	L MAIN AC
FLAP CONT	CPO	B-1	ESS DC
FLAP/STAB POS	CP	E-5	AFT E-BAT
FLAP POS	CP	K-4	ESS DC
FLAP/STAB WARN	P	D-3	ESS DC
GND SPOILER	CPO	C-6	L MAIN DC
MANUAL FLAP CONT	CPO	A-1	ESS DC
SHAKER #1	CPO	A-10	ESS DC
SHAKER #2	CPO	B-10	R MAIN DC
SPD BRAKE/FLAP ALARM	P	D-4	ESS DC
STALL BARR DUMP VALVE	CPO	A-8	ESS DC
STALL BARR VALVE #1	CPO	A-12	ESS DC
STALL BARR VALVE #2	CPO	B-12	R MAIN DC
STALL BARRIER #1	CPO	A-9	ESS DC
STALL BARRIER #2	CPO	B-9	R MAIN DC
STALL WARN CMPTR #1	CPO	A-11	ESS DC
STALL WARN CMPTR #2	CPO	B-11	R MAIN DC

Fuel System Circuit Breakers – ATA 28

Circuit Breaker Name	Panel	Loc.	Bus
ALT PUMP CONT	PO	D-4	R MAIN DC
FUEL INTERTANK V	PO	B-4	ESS DC
FUEL LOW LEVEL	PO	B-1	ESS DC
FUEL PUMP IND	PO	A-4	ESS DC
FUEL PUMP LOGIC	PO	C-4	L MAIN DC
FUEL X FLOW V	PO	D-2	ESS DC
L FUEL QTY	PO	C-1	AFT E-BAT
L FUEL S/O	PO	A-2	ESS DC
L FUELING S/O	PO	A-3	ESS DC
L ALTN BOOST PUMP	PDB	RDC	R MAIN DC
L MAIN BOOST PUMP	PDB	DC ESS	ESS DC
MAIN PUMP CONT	PO	A-1	ESS DC
R FUEL S/O	PO	B-2	ESS DC
R FUELING S/O	PO	B-3	ESS DC
R FUEL QTY	PO	D-1	AFT E-BAT
R ALTN BOOST PUMP	PDB	RDC	R MAIN DC
R MAIN BOOST PUMP	PDB	DC ESS	ESS DC

Hydraulic Power System Circuit Breakers – ATA 29

Circuit Breaker Name	Panel	Loc.	Bus
APPLIED BRAKE PRESS	CPO	D-6	ESS DC
AUX HYD PRESS	CPO	D-4	ESS DC
AUX HYD PUMP	CPO	D-5	ESS DC
COMB HYD PRESS	CPO	A-3	ESS DC
COMB HYD QTY	CPO	A-4	ESS DC
FLT HYD CONT	CPO	C-5	L MAIN DC
FLT HYD PRESS	CPO	C-4	ESS DC
FLT HYD QTY	CPO	B-4	ESS DC
L HYD S/O	CPO	A-5	ESS DC
R HYD S/O	CPO	B-5	ESS DC
UTILITY HYD PRESS	CPO	B-3	ESS DC
UTILITY HYD PUMP OFF	CPO	C-3	ESS DC
WHEEL BRK ACCUM PRESS	CPO	D-3	ESS DC

Ice and Rain Protection System Circuit Breakers – ATA 30

Circuit Breaker Name	Panel	Loc.	Bus
L COWL A/I PRESS	CP	J-12	ESS DC
L COWL ANTI-ICE	CP	J-13	ESS DC
L FRONT PWR*	CP	J-8	R MAIN AC
L FRONT WSHLD*	CP	J-8	R MAIN AC
L PITOT HT CONT	CP	L-12	ESS DC
L PITOT HT PWR	CP	L-11	ESS AC
L SIDE PWR*	CP	J-10	L MAIN AC
L SIDE WSHLD*	CP	J-10	L MAIN AC
L WING ANTI-ICE	CP	J-14	ESS DC
L WSHLD WIPER	CP	J-11	ESS DC
R COWL A/I PRESS	CP	K-12	ESS DC
R COWL ANTI-ICE	CP	K-13	R MAIN DC
R FRONT PWR*	CP	L-8	L MAIN AC
R FRONT WSHLD*	CP	L-8	L MAIN AC
R PITOT HT CONT	CP	M-12	R MAIN DC
R PITOT HT PWR	CP	M-11	R MAIN AC
R SIDE PWR*	CP	K-10	R MAIN AC
R SIDE WSHLD*	CP	K-10	R MAIN AC
R WING ANTI-ICE	CP	K-14	ESS DC
R WSHLD WIPER	CP	K-11	R MAIN DC
STBY PITOT HT CONT	CP	L-13	ESS DC
STBY PITOT HT PWR	CP	M-13	ESS AC
TOTAL TEMP PROBE HTR	CP	L-10	R MAIN AC
TOTAL TEMP VALVE	CP	M-10	R MAIN DC

Indicating & Recording System Circuit Breakers – ATA 31

Circuit Breaker Name	Panel	Loc.	Bus
BUS CONT #1	CP	K-2	ESS DC
BUS CONT #2	CP	L-2	ESS DC
BUS CONT #3	CP	M-2	ESS DC
CLOCK #1	CP	H-14	FWD E-BAT
CLOCK #2	CP	I-14	AFT E-BAT
DAU #1A	CP	A-14	ESS DC
DAU #1B	CP	C-14	ESS DC
DAU #2A	CP	B-14	ESS DC
DAU #2B	CP	D-14	ESS DC
DISPLAY CONT #1	CP	F-5	ESS DC
DISPLAY CONT #2	CP	G-5	R MAIN DC
DISPLAY MASTER #1	CP	I-2	BATT BUS 1
DISPLAY MASTER #2	CP	J-2	ESS DC
DISPLAY UNIT #1	CP	E-6	ESS DC
DISPLAY UNIT #2	CP	F-6	R MAIN DC
DISPLAY UNIT #3	CP	G-6	ESS DC
DISPLAY UNIT #4	CP	H-6	R MAIN DC
DISPLAY UNIT #5	CP	I-6	L MAIN DC
DISPLAY UNIT #6	CP	J-6	R MAIN DC
FDR CONT #1	CP	C-8	ESS DC
FDR CONT #2	CP	C-9	BATT BUS 1
FDR/FDAU	CP	C-7	ESS AC
FWC #1	CP	A-13	ESS DC
FWC #2	CP	B-13	ESS DC
G-METER	CP	C-13	ESS DC
POSN SNSRS	CP	C-10	ESS AC
RADIO RACK COOLING DC	CP	I-1	ESS DC
SPZ-8000 SHUTDN	CP	L-4	R MAIN DC
SYM GEN #1	CP	K-3	ESS DC
SYM GEN #2	CP	L-3	R MAIN DC
SYM GEN #3	CP	M-3	L MAIN DC
TONE WARN #1	P	A-5	ESS DC
TONE WARN #2	P	B-5	R MAIN DC
WARN LTS PWR #1	P	F-1	ESS DC
WARN LTS PWR #2	P	F-2	ESS DC
WARN LTS PWR #3	P	F-3	ESS DC
WARN LTS PWR #4	P	F-4	ESS DC
WARN LTS PWR #5	P	F-5	ESS DC
WARN LTS PWR #6	P	G-1*	ESS DC
WARN LTS PWR #6	P	G-2*	ESS DC
WARN LTS PWR #7	P	G-2*	ESS DC
WARN LTS PWR #7	P	G-3*	ESS DC
WARN LTS PWR #8	P	G-3*	ESS DC
WARN LTS PWR #8	P	G-4*	ESS DC
WARN LTS PWR #9	P	G-4*	R MAIN DC

WARN LTS PWR #9	P	G-5*	R MAIN DC
WARN LTS PWR #10	P	G-5*	ESS DC
WARN LTS PWR #10	P	H-3*	ESS DC
WARN LTS PWR #11	P	H-3*	ESS DC
WARN LTS PWR #11	P	H-4*	ESS DC
WARN LTS PWR #12	P	H-4*	ESS DC
WARN LTS PWR #12	P	H-5*	ESS DC
WARN LTS PWR #13	P	H-5*	ESS DC
WARN LTS PWR #13	P	I-4*	ESS DC
WARN LTS PWR #14	P	I-4*	ESS DC
WARN LTS PWR #14	P	I-5*	ESS DC
WARN LTS PWR #15	P	I-5*	ESS DC
WARN LTS PWR #15	P	J-5*	ESS DC

Landing Gear System Circuit Breakers – ATA 32

Circuit Breaker Name	Panel	Loc.	Bus
BCS CHL #1	CPO	A-2	FWD E-BAT
BCS CHL #2	CPO	B-2	ESS DC
BTMS*	CP	D-10	R MAIN DC
INBD ANTI-SKID	CPO	A-2	FWD E-BAT
L NUTCRACKER	CPO	A-13	ESS DC
LDG GEAR POS IND	P	B-5*	AFT E-BAT
LDG GEAR POS IND	P	E-5*	AFT E-BAT
LDG WARN HORN	P	E-4	ESS DC
NUTCRACKER	CPO	B-13	ESS DC
OTBD ANTI-SKID	CPO	B-2	AFT E-BAT
R NUTCRACKER	CPO	C-13	ESS DC
STEER BY WIRE #1	CPO	C-12	ESS DC
STEER BY WIRE #2	CPO	D-12	R MAIN DC
WHEELSPEED	CPO	C-10	ESS DC**

Lights System Circuit Breakers – ATA 33

Circuit Breaker Name	Panel	Loc.	Bus
#1 STANDBY WARN PWR	P	A-1	ESS DC
#2 STANDBY WARN PWR	P	B-1	ESS DC
AFT PED PWR SUPPLY	P	E-3*	L MAIN DC
AFT PED PWR SUPPLY #1	P	E-2	R MAIN DC
AFT PED PWR SUPPLY #2	P	E-3*	L MAIN DC
ANN LTS CONT MAIN	P	A-3*	ESS DC
ANN LTS CONT MAIN	P	B-3*	ESS DC
ANN LTS CONT STBY	P	B-3*	ESS DC
ANN LTS CONT STBY	P	C-3*	ESS DC
BCN LTS	P	C-6*	R MAIN AC
BOT A/C LT	P	D-6*	R MAIN DC
BOT A/C LT	P	F-7*	R MAIN DC
BOT A/C LT GND OPER	P	E-6*	ESS DC
BOT A/C LT GND OPER	P	F-9*	ESS DC
CTR TAXI LT PWR	P	D-10	R MAIN AC
DOME LT	P	B-6	ESS DC
FLOOD LTS OVERRIDE	P	A-6	ESS DC
L CKPT ANN LTS PWR	P	A-2*	ESS DC
L CKPT ANN LTS PWR	P	B-2*	ESS DC
L CONSOLE FLOOD	P	A-10	L MAIN DC
L CONSOLE PWR SUPPLY	P	D-1	L MAIN DC
L FLT PNL/GSHLD	P	A-7	ESS DC
L LDG LT CONT	P	E-6*	L MAIN DC
L LDG LT CONT	P	D-7*	L MAIN DC
L LDG LT PWR	P	C-7	L MAIN AC
L TAXI LT PWR	P	C-10	R MAIN AC
LOGO LTS	P	C-5	R MAIN AC
NAV LTS	P	C-8*	L MAIN AC
NAV LTS	P	E-8*	L MAIN AC
NAV/INSP LTS CONT	P	D-8	L MAIN DC
OVHD ANN LTS PWR #1	P	A-1*	ESS DC
OVHD ANN LTS PWR #1	P	C-1*	ESS DC
OVHD ANN LTS PWR #2	P	A-2*	ESS DC
OVHD ANN LTS PWR #2	P	C-2*	ESS DC
OVHD ANN LTS PWR #3	P	A-3*	ESS DC
OVHD ANN LTS PWR #3	P	C-3*	ESS DC
OVHD ANN LTS PWR #4	P	A-4*	ESS DC
OVHD ANN LTS PWR #4	P	C-4*	ESS DC
OVHD ANN LTS PWR #5	P	A-5*	ESS DC
OVHD ANN LTS PWR #5	P	C-5*	ESS DC
OVHD PNL PRI	P	B-9	ESS DC
OVHD/PED FLOOD LTS	P	A-9	L MAIN DC
PED ANN LTS PWR	P	D-2	ESS DC
PEDESTAL	P	A-8	L MAIN DC
PYLON LT	P	D-5	ESS AC
R CKPT ANN LTS PWR	P	B-2*	ESS DC

R CKPT ANN LTS PWR	P	C-2*	ESS DC
R CONSOLE FLOOD	P	B-10	R MAIN DC
R CONSOLE PWR SUPPLY	P	E-1	L MAIN DC
R FLT PNL/GSHLD	P	B-7	R MAIN DC
R LDG LT CONT	P	F-7	R MAIN DC
R LDG LT PWR	P	D-7*	R MAIN AC
R LDG LT PWR	P	E-7*	R MAIN AC
R TAXI LT PWR	P	E-10	R MAIN AC
SIGN LTS	P	B-1*	L MAIN DC
SIGN LTS	P	D-5*	L MAIN DC
STBY ENG INSTR	P	B-8	AFT E-BAT
STROBE LTS	P	E-8*	R MAIN AC
STROBE LTS	P	F-9*	R MAIN AC
STROBE LTS CONT	P	E-7*	R MAIN DC
STROBE LTS CONT	P	F-8*	R MAIN DC
TAXI LTS CONT	P	C-9	L MAIN DC
TOP A/C LT	P	C-6*	R MAIN AC
TOP A/C LT	P	F-8*	R MAIN AC
UTILITY LTS	P	D-9*	ESS DC
UTILITY LTS	P	E-9*	ESS DC
WARN LTS TEST	P	B-4*	ESS DC
WARN LTS TEST	P	J-5*	ESS DC
WHEEL WELL LTS	P	F-6*	ESS DC
WHEEL WELL LTS	P	F-10*	ESS DC
WING INSP LTS	P	C-9*	L MAIN AC
WING INSP LTS	P	E-9*	L MAIN AC

Navigation System Circuit Breakers – ATA 34

Circuit Breaker Name	Panel	Loc.	Bus
ADF #1	CP	F-11	ESS DC
ADF #2	CP	G-11	R MAIN DC
ADF CONT #1	CP	F-12	ESS DC
ADF CONT #2	CP	G-12	R MAIN DC
AHRS AC	CP	M-6	L MAIN AC
AHRS DC	CP	M-5	L MAIN DC
BATT AIR CIRCULATOR	AUX PWR RLY BOX	NA	NA
CAM AC (EVS)	CP AUX	A-7*	R MAIN AC
CDU #1	CP	D-7	ESS DC
CDU #2	CP	E-7	R MAIN DC
COOL VLV (EVS)	CP AUX	D-6*	R MAIN DC
DADC #1	CP	F-3	ESS DC
DADC #2	CP	G-3	R MAIN DC
DATA LOADER	CP	I-7	L MAIN DC
DBDI #1	CP	F-4	ESS DC
DBDI #2	CP	G-4	ESS DC
DDRMI #1	CP	F-4	ESS DC
DDRMI #2	CP	G-4	ESS DC

DME #1	CP	F-10	ESS DC
DME #2	CP	G-10	R MAIN DC
E DBDI #1	CP	H-5	ESS DC
E DBDI #2	CP	I-5	AFT E-BAT
E DDRMI #1	CP	H-5	FWD E-BAT
E DDRMI #2	CP	I-5	AFT E-BAT
EGPWS AC*	CP	D-10	L MAIN AC
EGPWE DC	CP	E-10	L MAIN DC
GPS #1	CP	D-9	ESS DC
GPS #2	CP	E-9	R MAIN DC
HTR (EVS)	CP AUX	C-6*	R MAIN DC
HUD CMPTR	CP AUX	C-4*	R MAIN DC
HUD OVHD UNIT	CP AUX	D-4*	R MAIN DC
ILS # 1	CP	I-3	ESS AC
ILS # 2	CP	J-3	ESS AC
IRS BATT CHGR #1	CP	H-13	L MAIN DC
IRS BATT CHGR #2	CP	I-13	R MAIN DC
IRU #1 AC	CP	K-6	L MAIN AC
IRU #1 DC PRI	CP	K-5	L MAIN DC
IRU #1 DC SEC	CP	J-5	ESS DC
IRU #2 AC	CP	L-6	R MAIN AC
IRU #2 DC	CP	L-5	R MAIN DC
NAV CMPTR #1	CP	D-8	ESS DC
NAV CMPTR #2	CP	E-8	R MAIN DC
NAV RCVR #1	CP	F-9	FWD E-BAT*
NAV RCVR #2	CP	G-9	AFT E-BAT*
NAV/DME CONT # 1	CP	D-9	ESS DC
NAV/DME CONT # 2	CP	E-9	R MAIN DC
PROC (EVS)	CP AUX	B-6*	R MAIN DC
RADIO ALTM #1	CP	I-4	L MAIN DC
RADIO ALTM #2	CP	J-4	R MAIN DC
TCAS	CP	D-11	L MAIN AC
TDR/CAD #1	CP	H-11	FWD E-BAT
TDR/CAD #2	CP	I-11	R MAIN DC
TDR/CAD CONT #1	CP	H-12	FWD E-BAT
TDR/CAD CONT #2	CP	I-12	R MAIN DC
W RDR CONT #1	CP	F-14	L MAIN DC
W RDR CONT #2	CP	G-14	R MAIN DC
W RDR R/T	CP	F-13	L MAIN DC
STBY HORIZON	CP	E-4	AFT - BAT
STBY ALTM VIB	CP	H-3*	FWD E-BAT
STBY ALTM VIB	CP	H-4	FWD E-BAT
STBY INSTR	CP	B-8	AFT E-BAT
XPNDR #1	CP	H-11	FWD E-BAT
XPNDR #2	CP	I-11	R MAIN DC

Oxygen System Circuit Breakers – ATA 35

Circuit Breaker Name	Panel	Loc.	Bus
CAM DC (EVS)	CP AUX	A-6*	R MAIN DC

Pneumatic System Circuit Breakers – ATA 36

Circuit Breaker Name	Panel	Loc.	Bus
BLEED AIR ISO S/O V	PO	D-12	ESS AC
L BLEED AIR	PO	A-10	ESS DC
L BLEED AIR IND	PO	B-12	ESS DC
R BLEED AIR	PO	B-10	ESS DC
R BLEED AIR IND	PO	C-12	ESS DC

Airborne Auxiliary Power System Circuit Breakers – ATA 49

Circuit Breaker Name	Panel	Loc.	Bus
AIR INLET DOOR	PO	C-11	ESS DC
APU PWR #3	P	L-10	ESS DC
APU START	P	H-10	ESS DC
APU CONT	P	G-10*	BATT BUS 1
APU CONT	P	L-9*	BATT BUS 2
APU PWR #1	P	J-10	BATT BUS 1
APU PWR #2	P	K-10	BATT BUS 2
ELWS #1	PO	A-9	ESS DC
ELWS #2	PO	B-9	ESS DC

Doors System Circuit Breakers – ATA 52

Circuit Breaker Name	Panel	Loc.	Bus
DOOR CONT/WARN	CPO	B-8	ESS DC

Engine Fuel and Control System Circuit Breakers – ATA 73

Circuit Breaker Name	Panel	Loc.	Bus
L ENG ACU SOL	P	J-11	L MAIN DC
L ENG IDLE	P	K-8	L MAIN DC
L TEMP CONT AC	P	H-11	ESS AC
R ENG ACU SOL	P	K-11	R MAIN DC
R ENG IDLE	P	L-8	R MAIN DC
R TEMP CONT AC	P	I-11	ESS AC

Engine Controls System Circuit Breakers – ATA 76

Circuit Breaker Name	Panel	Loc.	Bus
ENG SYNC	P	K-9	R MAIN DC

Engine Indicating System Circuit Breakers – ATA 77

Circuit Breaker Name	Panel	Loc.	Bus
ENG VIB MONITOR	CP	B-8	L MAIN AC
L ENG OIL PRESS	CP	A-12	ESS AC
L EPR 115V	CP	A-9	ESS AC
L STBY ENG INST	CP	A-11	AFT E-BAT
R ENG OIL PRESS	CP	B-12	ESS AC
R EPR 115V	CP	B-9	ESS AC
RR ENG TEST	CP	G-13	R MAIN AC
R STBY ENG INST	CP	B-11	R MAIN DC

Exhaust System Circuit Breakers – ATA 78

Circuit Breaker Name	Panel	Loc.	Bus
L SEC LOCK	P	G-7	ESS DC
L T/R EMER STOW	P	K-7*	ESS DC
L T/R EMER STOW	P	L-7*	ESS DC
L T/REV CONTROL	P	I-7	ESS DC
R SEC LOCK	P	H-7	ESS DC
R T/R EMER STOW	P	L-7	ESS DC
T/R EMER STOW	P	K-7	ESS DC

Oil System Circuit Breakers – ATA 79

Circuit Breaker Name	Panel	Loc.	Bus
ENGINE OILER	P	G-10*	ESS DC
ENGINE OILER	P	L-9*	ESS DC

Starting System Circuit Breakers – ATA 80

Circuit Breaker Name	Panel	Loc.	Bus
ENGINE START	P	K-6	ESS DC
L #1 IGN	P	I-8	ESS DC
L #2 IGN	P	J-8	ESS DC
R #1 IGN	P	I-9	ESS DC
R #2 IGN	P	J-9	ESS DC

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Emergency Airplane Evacuation

AFM 4-20-30

1. Parking Brake .... SET
2. L/R FUEL COCKS .... OFF
3. APU MASTER .... OFF
4. L/R FIRE Handles .... PULL
5. L/R FIRE Handles .... ROTATE FULLY TO DISCH 1 / DISCH 2
6. CABIN PRESS CONTROL .... MANUAL
7. OUTFLOW VALVE .... FULL OPEN
8. BATTERIES 1 and 2 .... OFF
9. Passengers / Crew .... EVACUATE IMMEDIATELY

NOTE: See **Emergency Escape Routes** (**AFM 4-20-40**) figure below.

END